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A study of top management education was carried out in a practical training situation to determine attitude change and relationships between training objectives and training evaluation, initial standing and change, and initial standing and background factors. Subjects were 140 people completing one of five management courses. A questionnaire and semantic differential scales measured initial attitudes and change. Questionnaires also determined background information, reasons for taking the course, policy of organizations and relation to the participants, interests, and knowledge and job experience. Raven's progressive matrices measured intellectual ability, and Rubenowitz's flexibility-rigidity scale measured resistance to change. Results showed some meaningful relationships between initial attitudes and background variables, a negative correlation between initial scores and change, and some change and background covariance requiring more verification. Change showed a tendency to relate to reasons for course attendance, suggesting that participants should be motivated before beginning the course and that study should be made of the motivation necessary to compel participants to take courses. (Extensive references and tables are included.) (jf)

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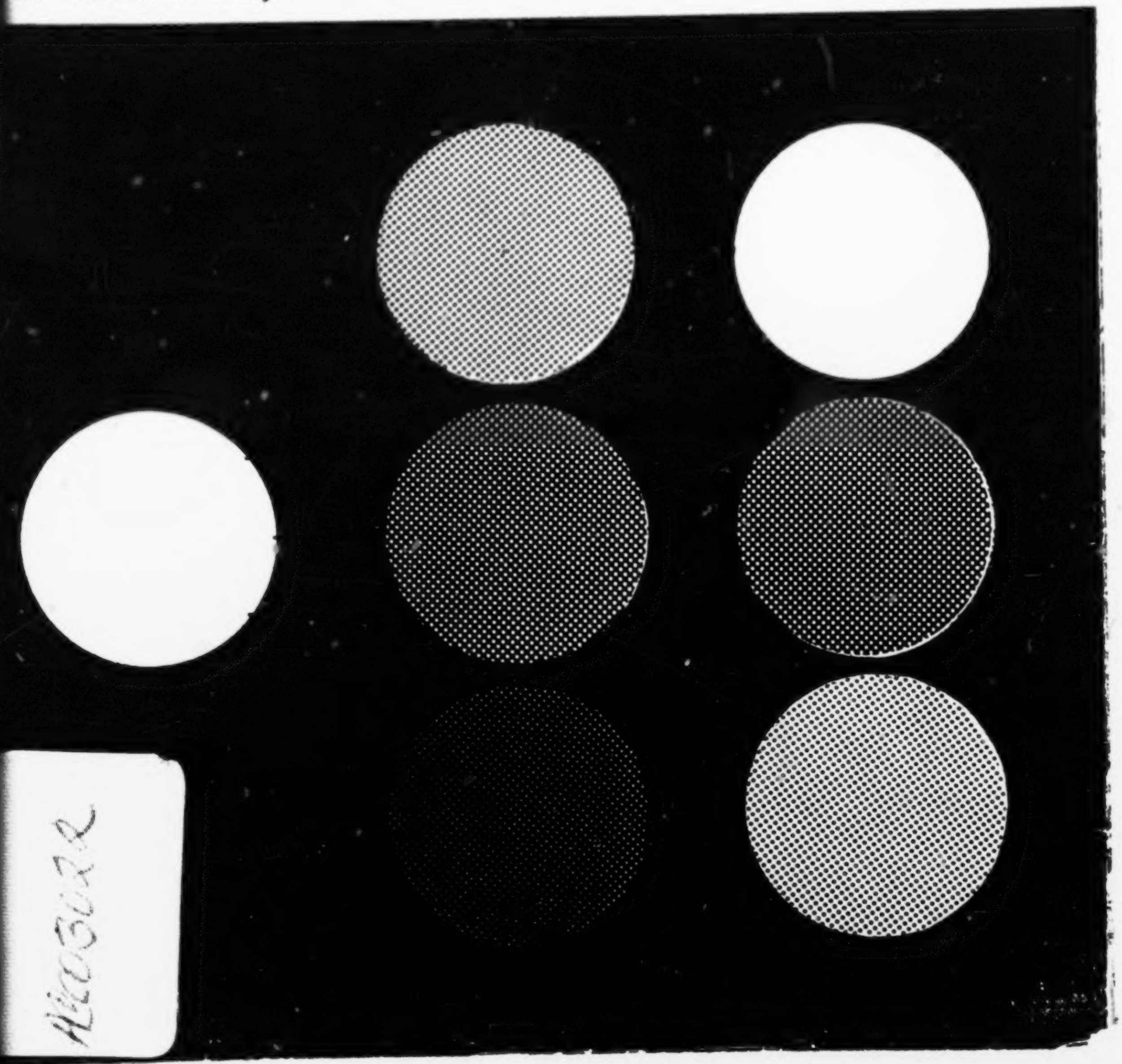
Åke Jerkedal

TOP MANAGEMENT EDUCATION

an evaluation study



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Åke Jerkedal

An evaluation study

TOP MANAGEMENT EDUCATION

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Åke Jerkedal:

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Personaladministrativa Rådet

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Abstract

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TOP MANAGEMENT EDUCATION — An evaluation study

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In terms of methodology and theory the study was concentrated on three complexes of problems:

- — Relationship between training objectives and training evaluation.
- — Relationships between initial standing and change on one hand and background factors on the other.
- — Attitude change.

The empirical portion of the study was carried out in a practical training situation (external, residential, general management training courses for top and next-to-the-top executives and specialists in companies and comparable organizations). Three main hypotheses were set up:

1. Initial attitudes and background variables covary
2. Initial attitudes and change covary
3. Change and background variables covary.

In order to test and shed light upon the hypotheses a great number of background variables as well as attitude variables were collected to determine initial standing and change. A comprehensive statistical analysis was made.

Findings

In order to test and exploratively illuminate main hypothesis 1. "Initial attitudes and background variables covary", a number of subhypotheses related to defined background areas were set up.

The hypotheses could naturally not be held verified in the sense that significant correlations for each of the background areas were obtained.

None the less, the findings disclose various correlations and correlational patterns which make it justifiable to conclude that meaningful relationships between background variables and initial attitudes do exist in a number of essential background and attitude areas.

When testing main hypothesis 2. "Initial attitudes and change covary" it was found that correlations were consistently negative. This is in full accord with the usual findings of other researchers.

In consequence of these findings it was stated that the relationships between background factors and change should not be studied unless initial attitudes were taken into account.

Main hypothesis 3 was stated: "Change and background variables covary". The first analysis was concerned with the mean value differences between pretest and posttest. A number of significant differences were found, most of them pointing in the direction of the stated training objectives. The primary interest, however, was to look for relationships between background factors and change.

The hypothesis could not, of course, be generally verified. On the other hand, different segments of the analyses produced findings which to some extent give meaningful support to the assumptions of relationships between background and change.

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The study has been attached to a special training situation, the Yxtaholm courses for top management education, and was initiated by Mr. K.A. Lindqvist, Training Director of the Yxtaholm School. His continuous interest and advice has stimulated me throughout the work.

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Åke Jerkedal

INTRODUCTION

The present study deals with that part of top management education which may be formally described as *external, residential, general training courses for top executives.* Its principal purpose is to examine how initial standing and change covary with different background data for the participants.

The study was carried out in a practical training situation and may be characterized as applied research. Its undertaking was suggested by those in charge of the program as a means of finding out more about the ways in which education contributes to top management development. However, it was possible for us to combine this approach with our own more specific interest in shedding methodological light on certain problem formulations in this field. The practical aspect, of course, was largely determinative in defining the limits of the experimental situation, a fact that may be regarded as entailing some drawbacks. For example, the influence of various factors on project results could not be kept constant or under control as often as we should have liked. Further, regard for the practical aims of training inevitably affected the planning and design of this study, its scope and scheduling.

At the same time, however, the drawbacks must be weighed against the definite advantages which working in a practical training situation conferred. It became possible to illuminate different problems in a realistic setting. The findings could be related directly to practical application and not, as is so often the case with research carried out in stricter accord with experimental psychology, first have to undergo transformation—a process that is fraught with perils.

Although the project should primarily be viewed as educational research, it ties in closely with the sociopsychological research on attitudes. On the other hand, it has no proper relevance for what is usually understood to be the purview of learning psychology.

The subject matter of this report is divided into three parts. Part One sets up a framework for theoretical discussion of the problems selected for study. The empirical investigation is introduced in Part Two, which also presents the pilot surveys, hypotheses and measuring instruments. In Part Three the results are presented and discussed.

PART I

Chapter 1

THE STUDY'S TERMS OF REFERENCE

The initial concern of this chapter will be to define the limits we have imposed on the area of research. We shall then consider the principal questions of methodology that will be taken up for discussion.

Top management education

According to the program syllabus published by the Swedish Employers Confederation (SAF), its courses at the Yxtaholm in-residence school are intended for "top and next-to-the-top executives and specialists in companies and comparable organizations". Top management education actually ranges over a far wider field than we have chosen for analysis. Here we can quote Urwick (1954, p. 47), who writes: "It (education) is the bringing out of all the potentialities latent in an individual mind and spirit. This is not a finite process which ends at a fixed date when the student graduates. It is a process which should last from the cradle to the grave. Intensive application to formal instruction in adolescence and young manhood is merely a practical convenience, the first sharping and sharpening of the individual's mental tools. If he uses them as he should, they will require regrinding from time to time all through life."

Obviously, top management education can be made to refer to present or potential top managers and no one else. But even this limitation is too broad for this study. To narrow the scope further, we can break down the concept of top management education into different classifications.

Thus Urwick (op. cit.) makes a threefold classification with reference to management development as follows: Educational development, social experience and job experience. Special management schools are included in the first category. Hall (1960) arrays different phases of management development along a temporal sequence: Stage 1 he calls graduate training; stage 2 is the first period of job experience after the completion of basic specialist training; stage 3 embraces continued in-company development and external management courses, both general and specialized; stage 4 pertains to senior management courses.

A third system of classification for university programs is suggested by Andrews (1959, pp. 578):

1. residential broad-coverage programs in general management or business administration;
2. nonresidential broad-coverage courses in business administration;
3. short, nonresidential, broad-coverage courses in business administration;
4. liberal arts courses;
5. special residential business courses, not broad-coverage but particularized either in subject matter or occupation of the participants;
6. seminars, workshop, conferences and short courses.

In our study, the empirical data has imposed a limitation which may be defined as follows: *By top management education we refer to external, residential, general management training courses for top and next-to-the-top executives and specialists in companies and comparable organizations.*

The foregoing corresponds most closely to Urwick's "special management schools", to Hall's "external courses, general management" in stage 3 and in part the content of stage 4, and to Andrews' item 1, "residential broad-coverage programs in general management or business administration".

SUBJECT CONTENT AND INSTRUCTION METHODS

Top management education, as we have operationally defined it here, seems to have started at the Massachusetts Institute of Technology in 1931 (see e. g. Andrews, op. cit., p. 578). Programs were greatly expanded in the United States after World War II and were also introduced on a large scale in Europe. As of 1959, according to Andrews (op. cit., pp. 580—581), 43 residential executive development programs at universities were operating in the U.S. A survey by the OEEC (1960) reported approximately 150 general courses in management education in 16 member countries. The management course at Yxtaholm, on which we have drawn for the empirical segment of this study, dates from 1952. Yxtaholm, located about 60 miles south of Stockholm, currently offers three courses a year. Each course runs for two three-week periods and is attended by about 35 persons.

Over the time span from 1931 to the present, the content of training courses for top managers has undoubtedly altered a great deal. One reason stems from the changed conditions under which these men work. Examples of such changes are given by Rhenman (1964, p. 4):

"Technical and economic developments have thus imposed partially new demands on corporate management and administration, but in part have also offered new opportunities and tools. Expanding enterprises, growing markets, an increasingly mechanized and automated production technology, and ever greater dependence on sophisticated engineering and the creation of markets—these are but a few of the trends that have made managements sense their tasks as being essentially different from what they were only a few decades ago. To an increasing extent, effective administration and skillful management have come to be regarded as a basis of prosperity both for the individual enterprise and the entire nation. It is also relevant to add that a continually widened interpretation is being put on the terms, management organization and corporate administration. This is certainly true in any event of the administrative methods developed for the most part by manufacturing industry and to a lesser degree by firms in the distributive trades, which in adapted form have found application in government agencies, schools, hospitals, research institutions, etc.

Lastly, we may observe that all the foregoing is paralleled by a significant development of the fundamental theories on business enterprise. Inspired by the behavioral sciences, and indeed by the engineering and physical sciences as well, an essentially new type of economic theory has emerged. A similar development is in process as regards management theory."

A further reason for the altered content of management training courses is to be sought in the higher educational attainments of those who attend them. Pierson (1959, p. 99) has this to say of American business leaders: "Even before 1900 the proportion of business leaders with a college education was well above the population as a whole; since then, despite the rapid rise in the percentage of the population attending college, the disparity has increased. Thus, Mabel Newcomer found that about 39 per cent of the older business executives in 1900 had attended college as against 80 per cent of the younger executives in 1950."

It appears likely that this trend also holds for other countries.

Methods of instruction have changed in corresponding degree. To cope with new elements of subject matter, there has been a need for new teaching methods and new findings of educational, psychological and sociological research related to learning, attitude formation and attitude change. Here we need only point to the research on group dynamics, which has had great bearing not only on sensitivity-oriented training, but also on the group-discussion and role-playing techniques that are so widely employed in management education.

Different types of courses vary greatly in the length of time they require, ranging from weeks to years. Programs often show a high degree of similarity in their subject content and the instruction methods employed, but some major discrepancies can also be noted at the same time.

It would be interesting to explore such variations further to see whether a cause-and-effect relationship could be determined. However, we have refrained from considering this aspect in our study, since the more general theoretical problems we have concentrated on do not primarily depend on specific subject content or instruction method in order to lend themselves to generalizations.

Limitations in our study of management education

An individual who undergoes management training is exposed to a flow of stimuli, both structured and unstructured. He perceives some of these stimuli selectively, whether consciously or unconsciously; and others he perceives haphazardly.

Some of the stimuli are interpreted and acted upon. It is in relation to this process that we can start to consider the results of training.

Program administrators and teachers can individualize the training to a limited degree only. By and large, they proceed with reference to all the participants as a group or to the imaginary concept of an average participant. It follows that the impact of training on the individual depends in large measure on his readiness to perceive, interpret and integrate the flow of different stimuli which may be said to constitute the training.

The results of training may be viewed in terms of changes in readiness to act by participants in consequence of the information and knowledge they assimilate and the attitudes they acquire and/or change.

Education involves a complex process of communication, and in order to keep this study within manageable scope we have confined ourselves to certain aspects.

Hovland, Janis & Kelley (1953, p. 12) classify their research program on communication and persuasion on the basis of four factors in the communication process: "1. the *communicator* who transmits the communication; 2. the *stimuli* transmitted by the communicator; 3. the *audience* responding to the communication; 4. the *responses* made by the audience to the communication". For our purposes we shall consider only the last two of these factors.

Kile (1966, p. 236) offers the following definition of evaluation: "We define evaluation as a systematic process of research which seeks to clarify and measure a. the relevant personal and situational characteristics of the trainee; b. the impacts of the training situation and its methodology on these characteristics of the trainee; and c. the intended and unintended consequences of the training." Having regard to the terms of our research, we shall confine ourselves to "*a*" and that part of "*c*" referring to the intended consequences of training.

Summing up, we can make the following demarcation: This study will not be concerned with the outcome of training, that may derive from teachers, specific items of instruction, or instruction methods; instead, we limit our purview to participants in the program and their responses to the instruction as a whole.

Evaluation model — research design

The selection of a research design is crucial for the social scientist. Apart from the fact that the results he presents are viewed in the light of his design, the applicability of the design itself is put to the test. Ackoff (1962, p. 4) puts it this way: "In science... every research effort not only has the purpose of answering a question or solving a problem, but also has the aim of testing, evaluating, and improving the research procedures employed."

Further, the scientist's terms of reference may not only be complex in their own right, but he is also often compelled to apply them to a highly intricate situation. Experiments carried out in the laboratory are often more amenable to conventional and standardized scientific rules than those which must conform to practical imperatives.

The foregoing observation carries two implications. First, in undertaking a project which is meant to fill a practical need, the scientist will frequently have to cope with problems of a nature that cannot be handled by the existing arsenal of scientific method. And second, execution of the project in a practical situation inevitably curtails the available options for experimental design in different ways.

This is not to suggest that a scientist in applied research can pay less attention to choice of design, or that less is expected of him in this respect than of a scientist who does his experimental work in the laboratory. It is to say, rather, that the decision he makes in choice of design may incur other consequences. Instead of being able to choose between several designs and then deciding on the basis of their respective merits, he may find that the choice lies between one possible design and no research at all.

Over the years, a rich body of tradition has also evolved in the behavioral sciences with regard to the carrying out of research under laboratory conditions. There is no dearth of rules which define sound experimental technique. But in a practical field situation, the scientist has to adapt flexibly the demands of scientific method to the realities he faces. This dilemma is illustrated by DuBois (1962, p. 63) in his comparison of researches into learning and training:

"Researchers interested in the basic phenomena of learning must necessarily deal with small units, and there is a strong tendency to think of small units as elements.

When training is discussed, however, the tendency is to emphasize an alternative approach. Instead of the acquisition of single acts, the interest is in the development of complex skills composed, perhaps, of many elements and integrated into far more than the simple sum of such elements. Instead of relating change in behavior to precisely describable external conditions, the concern is with relating changes in proficiency to broad and general characteristics of the learner and to major events in the learner's environment."

In explaining the limits we impose on our evaluation model, we see no reason to go into a general discussion of experimental design and of the necessary departures from an "ideal" design that we have had to make in this study. The essence of what we have said above is to reaffirm the principle, banal though it may sound, that the situation in which a research task is carried out will influence the selection and format of the experimental design.

A central question in research on management education concerns the choice of evaluation model. This has been chiefly true of discussing criteria for the results and impact of training. A number of researchers have described different evaluation models in relation to the criterion aspect. For examples of detailed résumés and discussions of the attendant methodology, reference is made to Meigniez et al (1962), Kile (1963 and 1966), Miner (1965) and Hesseling (1966).

Inasmuch as the works cited report at length on earlier studies and even go to the extent of advancing typologies, we have not considered it necessary to duplicate these efforts in our own presentation. Instead, we shall advert to several questions which bear directly on our choice of evaluation model. In so doing, we shall at the same time give reasons for circumscribing our terms of reference.

To begin with, it would be in order to dwell on the three main types of research design in which evaluation studies can usually be accommodated:

1. Subjective evaluation of training by participants
2. Training-related measures of change
3. Job-related measures of change

1. SUBJECTIVE EVALUATION OF TRAINING

The major part of evaluation attempts are subsumed under this heading. They do not so much represent research as they do opinion studies of a more or less unprofessional character. By means of questionnaires, interviews and conversations, the participants give more or less systematic expression to their views on the training as a whole or parts thereof, the qualifications of their teachers, the facilities they have been provided with, and so on. These studies tend to culminate in highly positive findings if the participants are satisfied with the physical setting of a course and with the people who supervise and teach it. For examples, see Andrews (1957 a, pp. 85—94).

Under certain conditions, these evaluations can nevertheless be useful to program supervisors and teachers as revealers of attitudes. On the other hand, of course, they provide no measures of behavior change as a result or effect of training.

For our purposes, we shall not be further concerned with this method of evaluation.

2. TRAINING-RELATED MEASURES OF CHANGE

This evaluation model chiefly aims to explain change in terms of knowledge, skills and attitudes. It derives from the classical method, with roots in education, psychology and sociology: we refer here to before-after measurements with or without the use of control groups. It would appear that this method is by far the prevailing one in research concerned with the evaluation of management training. The majority of studies in this field have focused on the results of Human Relations training, especially with reference to global attitude changes as measured by such instruments as "How Supervise?" and the "Oslo-Yale Scale".

3. JOB-RELATED MEASURES OF CHANGE

Grouped under this head are those studies where subjective measures are usually applied towards having job-related criteria serve as determinants of training effects.

To arrive at measures of training effects, questionnaires and interviews are largely used to find out what changes in a participant's behavior have occurred after his renewed exposure to the company environment. Appraisals are made by the participant himself, and in some cases also by his superiors, associates and subordinates. (For examples of this type of research, see Bakke (1959) and Andrews (1957 and 1966).

Discussion of training-related versus job-related measures of change in management training evaluation

For the sake of our discussion, let us reduce models 2 and 3 into a greatly simplified system which can be generally applied to management training:

1. analysis of training needs;
2. analysis of training objectives and planning of course content;
3. execution of training;
4. control of training results;
5. control of training effects.

Our outline includes provision for two control instruments. By *control of training results,* we refer to measurements for determining how participants have been affected by training in terms of skills, knowledge and attitudes. For these measurements we employ training-related criteria. By *control of training effects,* we refer to measurements for determining how participants have been affected in terms of changes in the performance of job tasks as envisioned by the training.

A major topic of discussion in management training evaluation studies has revolved around choosing between these two controls.

Although programs of management training vary greatly in their objectives, they all have one objective in common: to alter the behavior of participants so that they, in accordance with some predetermined definition, will function better as executives afterwards. Hence the natural inclination to rate the worth of a course by comparing the job performance of participants before and after training, with the difference between these two measures taken as a criterion. This approach to evaluation seems to be generally favored by researchers in the field, among them van Ginneken (1962), Buchanan (1955), Korb (1956), Goodacre (1957) and McKinney (1957). While the emphasis on job-related criteria in preference to the training-related may be understandable, it has, to our mind, an unfortunate consequence, since it oversimplifies the problems which must be analyzed before a decision between the two models is reached.

Instead of assuming as a general rule that job-related criteria are inherently more valuable than the training-related, it seems to us more constructive to let the choice be governed by the research objectives and by a formulation in the researcher's mind of the errors he is prepared to accept and avoid in his work.

If the researcher's aim with an evaluation study is to show how a management training course changes the behavior of participants at the workplace, it lies ready to hand for him to draw on job-related criteria to measure the training effect. In thus committing himself, he should be aware of and accept the fact that relevant performance data are extremely difficult to obtain. The job situation of top executives is usually such that their performances can be seen only indirectly as end products in a chain of decisions or work processes, which depend not only on what they themselves do or even in collaboration with other staff, but also on other units within the organization, on the organization's policies, the external fluctuations of business, and so on. Thrust into this complexity, the researcher usually has no choice but to forego objective yardsticks of performance and rely instead on subjective evaluations by the training participants, their superiors, etc. The difficulties of working with job-related criteria are clearly illustrated by

Westerlund & Strömberg (1965, pp. 359—360) in their study, "The Measurement and Appraisal of the Performance of Foremen", in which they employed both objective and subjective criteria. Summing up, they say: "The final result of our investigation is of a rather negative character. Our data about performance and behavior at the workplace from the participating companies have been found to be fairly unreliable, the variations in the data series to a large extent being random. We did not find a correlation between our measures of performance and behavior on the one hand, and supervisors' assessments of the foremen and the foreman's characteristic features on the other. This result can be explained in two ways. It can depend on the random quality of the data series, or on the fact that no connection exists."

If a researcher elects to draw on job-related criteria to evaluate a top management training course attended by persons who hold different positions, and who work in different organizations in different industries and lines of business, he would be well advised not to expect the job situation of his subjects to be any less complicated and difficult to analyze than was true of the foremen in the Westerlund & Strömberg study.

If the researcher elects to draw on training-related criteria to find out how a course has changed the knowledge, skills and/or attitudes of its participants, he should be aware of and accept the following: This research model will not be able to answer the question: To what extent has training influenced participants towards changed behavior in the job situation? It will be possible to demonstrate that training has yielded good results in the sense that differences between before-and-after measures have gone in the desired direction. But such a result does not necessarily disclose anything as to whether the content and execution of training corresponds to the actual training needs. Thus good training results need not generate their equivalent in good training effects; indeed, it is possible to obtain a negative correlation between result and effect. Under certain conditions, to be sure, training effects may to some extent be deduced indirectly from the training results. In that case the content must be based on the objectives formulated after a careful analysis of training needs. But in regard to general management training courses, this chain of needs, objectives, content and execution will be weak if the courses are evaluated only with reference to training results.

Obviously, a researcher who sets out to evaluate management training will have a general objective with his project. As part of its planning phase, he will be forced to analyze the conditions which the research situation offers in a broad sense. Among other things, he will have to make up his mind on questions of methodology. In the course of having to decide these and other matters of planning, he may well find that his general objective will be modified and made more specific. In such cases we may expect a mutual adaptation of objectives formulation and selection of research model. This process of mutual adaptation has become distinctly manifest in our study.

The first methodological criterion we set up for our evaluation study was that it enabled us to make use of both before and after measurements. In the event, it proved quite impossible to obtain pre-training assessments of job performance even by subjective means. This fact alone ruled out the use of job-related criteria for our model. The findings of a pilot study, carried out to arrive at training objectives which would determine training content, showed that the Yxtaholm course primarily sought to influence the attitudes of participants in different areas.

So as to determine participant attitudes in accordance with the training objectives, we thought it most adequate to make use of training-related instruments for measuring attitudes.

A second pilot study, concerned with the relationship between background of participants and their initial attitudes plus propensity to change, culminated in a number of hypotheses. In our opinion, these hypotheses could most easily be tested by subjecting them to training-related criteria.

It is appropriate at this point to declare our own general point of view as regards choosing between training-related and job-related criteria in training evaluation: For evaluation purposes, an immediate concern will be to find out whether the training has realized the intended objectives. This can be done with the help of before and after tests.

Not until this control is carried out and has returned a positive finding will it be in order to devote closer study to the degree of permanence in the changes observed, and to the extent to which these changes also accord with changes in the job situation. The direct training-related control of training results may not here be viewed as a feeble substitute for measurements relating to the job situation, but rather as an equivalent and necessary step in the work of evaluation. If, say, we conduct an investigation which employs job criteria exclusively, and our finding is negative in the sense that post-training changes are undetectable in the results, we can scarcely draw any conclusions therefrom. The absence of change may be due to several causes: the criteria are defective; course content does not satisfy the needs of participants; the subject matter of the course was not taught properly; the company environment did not provide an opportunity for application of the benefits conferred by training; and so on.

A study restricted to job criteria, as in the above case, does not permit us to reach a judgment as to which of these interpretations are admissible. In the light of the foregoing, we can proceed to impose a third limitation on our study: *Only training-related measures of change will be used to control training results.*

It will be in order here to summarize our terms of reference. We started out by circumscribing what we meant by top management education. This was described as external courses on general managements for "top and next-to-the-top managers and specialists in companies and comparable organizations".

Next, we declared that we would not be concerned with the relationship between the form and content of management education on the one hand, and existing theories of administration, organization and leadership on the other. Further, we imposed a methodological limitation by saying that the empirical investigation would make use of training-related criteria only.

An additional limitation followed in consequence of the pilot study, "Analysis of Training Objectives" (see Chapter 6). In the matter of initial standing and change we have limited our study to embrace attitudes, attitude formation and attitude change.

In terms of methodology and theory, we shall be concentrating on three complexes of problems:

Relationship between training objectives and training evaluation

Relationships between initial standing and change on one hand and background factors on the other

Attitude change

These three complexes will be probed in three chapters to give a background of theory and method for the full-scale investigation.

Chapter 2

RELATIONSHIP BETWEEN TRAINING OBJECTIVES AND EVALUATION

Researchers are generally agreed that the ultimate aim of management education is to improve executive behavior at the workplace in one way or another. Nor would it provoke disagreement to say that evaluation cannot be carried out unless it is related to training objectives. However, opinions start to differ as soon as attempts are made to cast this relationship in a concrete mold for purposes of evaluation. In the present chapter we shall describe our frame of reference and give reasons to justify it in terms of the objectives-evaluation relationship.[1]

An assumption which must underlie all external courses of general management training is that each participant will have, to some extent at least, training needs for which the course is meant to cater. One researcher who very strictly underlines the similarity of training needs is Bakke (1959, p. 16). In his account of a comprehensive evaluation study pertaining to management education in Norway, he expresses the following view on the relationship between training objectives, needs and evaluation:

"These essential processes in which every administrator and executive participates by tasks appropriate to his area of function (production, sales, personnel, finance, engineering, etc.) are as follows:

Workflow (or producing) process

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[1] The objectives-evaluation problem is of course a universal one in all education. It has been given particular attention in TWI methods (see War Manpower Commission: The Training Within Industry Report, Washington 1945) and in programmed instruction (see e.g. B. S. Bloom: Taxonomy of Educational Objectives, New York 1956).

Directive authority (or directing from above) process
Representative authority (or directing from below) process
Reward and penalty (or motivating) process
Perpetuation (or motivating) process

(These are directed to maintenance and development in quantity and quality of the following basic resources used by a company: Materials, Money, People, Ideas, Nature.)

Evaluation (or appraising and ranking) process
Communication (or informing) process
Identification (or whole-making and defining) process

The question is not merely whether the course is so planned that all these organizational processes are taken up for consideration, but whether the response of the 'student' and other interviewees indicates that effects have been felt on the carrying out of tasks incorporated in these processes."

The clear implication is that Bakke does not consider it necessary to act upon the objectives stated by the course directors for evaluation purposes (see page 139), but is more concerned to define a series of generally valid training objectives from which evaluation criteria may be derived.

According to other researchers, even though the participants in a course share a common training need which they want satisfied, there will still be cause to examine critically whether the training objectives which determine course content are adapted to requirements in the management field. Bates & Sykes (1962) have empirically demonstrated that the conceptual subject matter of courses does not always correspond to the real world of day-to-day management. In their view, this discrepancy is chiefly due to the all-too-frequent use of "academic" deskwork to arrive at course content instead of empirical research into executive behavior. The authors call for additional research in this field and cite the work of Carlsson (1951) as an example.

Argyris (1956, p. 35) argues from similar premises in questioning the stands which dictate the formulation of training objectives: "The objectives of many executive development programs are defined primarily as a result of interviews with academics and top management representatives designed to ascertain what they desire an executive to acquire while attending the course. Such research has resulted in some very helpful information. However, some of the objectives often aimed at by both academic and management people have recently come under careful scrutiny by the behavior scientist."

Besco, Tiffin & King (1959, p. 14) hammer home this observation: "Before any evaluation of management development programs can be made, the goals of management must be defined as they relate to organizational objectives and to the management skills and characteristics that are necessary to achieve these goals."

In support of their view, the authors cite the effect studies made by Fleishman et al (1955, pp. 35) relating to an away-from-company course for supervisors. According to one of the findings therein, participants from companies where the established climate of leadership differed from the philosophy and techniques taught in the course performed *less* effectively after their return to the company environment.

It is pertinent here to recall the observation we made earlier: namely, that an evaluation which incorporates both job-related and training-related criteria might conceivably produce a negative correlation between them.

Reference may also be made in this context to Anshem (1955, p. 73), who makes the following observation:

"To evaluate development programs, management must have the objectives it is seeking clearly in mind. Unfortunately, most companies have no clear idea of what they want university courses to do for their representatives. The view most commonly expressed in interviews with top managements is that they want the programs to give their men a 'company-wide' rather than a 'divisional' outlook on management problems. But a little exploratory digging by the interviewer reveals that this concept floats in an intellectual haze and is not closely related to any concrete executive requirements or skills."

According to Andrews (1957 b, p. 68), evaluation must proceed with reference to the relevant, individual goals of participants:

"1. Formal education will be aimed at longrange development and growth, not at immediate change in how managers perform their jobs.

University and company courses will not be counted on to be remedial treatment for specific defects or to make silk purses out of sows' ears. The company expects men to be affected, and it will be counted as a defect either in them or in their courses if they are not; but the effect will be different from individual to individual, and may not be conspicuous to those who do not know them well."

Other researchers have likewise stressed giving freer play to individual needs in training programs. Here, for example, is a comment by Horwitz (1964, p. 366) on the training objectives of T-Groups: "Thus, although all persons involved in T-Groups may be found to verbalize a similar goal for the group, upon analysis it becomes evident that their actual goals must turn out to be quite dissimilar".

It seems to us that these considerations have not been adequately allowed for in evaluation studies.

We pointed out earlier that management training exposes the individual participant to various structured and unstructured stimuli, to which he reacts both selectively and randomly. Some of the stimuli are interpreted by him and acted upon. The way in which these processes occur probably depends in large part on those objectives which matter most to him in attending a course.

For examples of what the participants themselves may have in mind, reference is made to the studies by Draper (1965) and Thorsrud et al (1962). Draper was primarily interested in how these subjective interpretations can change during the course of a program, while Thorsrud concerned himself with the question of how officially stated objectives relate to the views of teachers and learners.

Opinions on training objectives may also differ among the teachers who staff the same program. This is demonstrated by Dressel & Mayhew (1954, p. 3) in a study on general education. We quote: "There was also evidence of considerable disagreement among members of a given general education staff as to the range of objectives accepted for the program and a tendency to associate only one or two of the objectives with the particular courses taught." The authors also cite Hook (1952, p. 12): "Sidney Hook has noted ... a tendency to rest content with the formulation of goals, to overlook the difficulties in implementing them in concrete curriculums, and the still greater difficulties of evaluating to what extent we make good what our college catalogs promise. Agreement on objectives, even when it is achieved, means little, for the stating of objectives is really inseparable from the decision as to the means by which these are to be achieved."

Up to now we have been discussing points of view on training objectives and their connection with the value of training. Summing up under this head, we can reaffirm our original observation: It is generally agreed that the ultimate goal of management education is definably improved behavior in one or more respects.

A fundamental assumption of management courses is that all participants need training to some extent, and that the courses can satisfy these needs at least in part.

The objectives which determine training content in an external top management course must be based on a more or less careful analysis of the training needs of participants, considered with reference to their job roles.

These courses cannot be adapted to the needs profile of every individual participant, but rather to that of an imaginary average participant. This means that different segments of course content are variously adapted to individual need. The point here is that even though a course may contain topics which according to Bakke have relevance for the job of every single participant, it does *not* follow that participants have the same need of training in these topics. The people attending a course are a heterogeneous lot in terms of such factors as previous experience, education and present job duties. Even in the absence of empirical data (of the kind we collected for our pilot studies) relating to this question, it stands to reason that training needs to a certain degree are bound to be dissimilar from one participant to another.

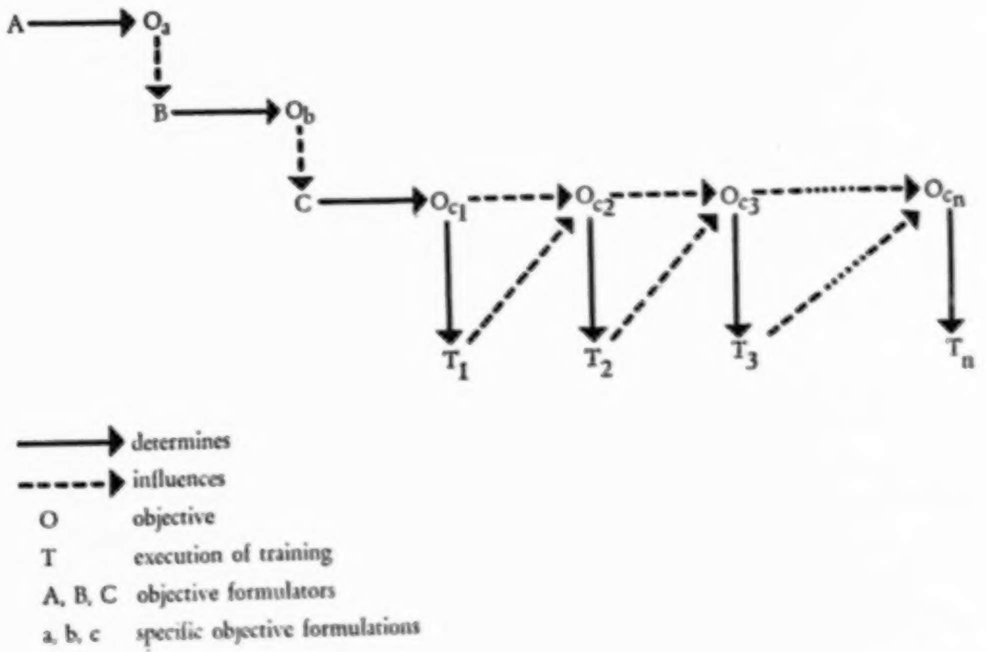
A model for the connection between formulation of objectives and execution of training

In our opinion, the relationship between stated objectives, as embodied in training content, and the objectives sought by the participants has fundamental bearing on the methodological design of an evaluation study. Accordingly, there is strong reason to throw serious doubt on the method, so often employed in studies of this kind, for analyzing the impact of training only in terms of shifts in mean values. In any event, such studies must of course assume that the training seeks to influence and change the behavior of participants in one and the same direction.

That participants should have varying needs to satisfy within the overall scope of training requirements is a simple enough premise. But if to this we add the complication that participants come from different firms with different "training requirements", an even stronger case can be argued for analyzing training needs as a basis for evaluation. Let us illustrate the point with an example.

A course on different methods of cost accounting has as its primary purpose the influencing of participants in favor of one method as against another. One of the participants comes from a company which fully endorses the training objective in this regard, while a second participant comes from a company which, for one reason or another, adheres to the disfavored method. Neither man is particularly knowledgeable in the field. If we were now to obtain the same impact on both participants, in the sense that attitude to the first method turned from (say) indifferent to positive, it would be reasonable to conclude therefrom that the stated objectives and the participant's training needs

Fig. 1. *Connection between formulation of objectives and execution of training.*


A
O_a
B
O_b
C
O_c1
O_c2
O_c3
O_cn
T_1
T_2
T_3
T_n
determines
influences
O objective
T execution of training
A, B, C objective formulators
a, b, c specific objective formulations

coincided and hence the resulting change was favorable, while in the second case we have a conflict between the two and hence negative impact in relation to the participant's needs (and his company's). (We assume here that the participant neither can nor should change company policy in this respect after completion of training.)

The connection between training objectives and evaluation may also be dealt with from the following aspect, which we hold to be of essential methodological importance, especially when the question of evaluation first comes up after a course is completed. The objectives of training are generally viewed in simple and direct relation to the end product. An analysis of training objectives underlies the formulation of objectives, the planning of content, and the execution of training. There are reasons to believe that the relationships here involved are more complex. In order to penetrate this problem in greater depth, we proceed with reference to a hypothetical model set up in Fig. 1.

In materializing the model we let A stand for the program initiator. This can be any of several interested parties, such as a government agency, an employer, a trade union, or a representative of the group that is to undergo training.

Initiator A presents one or more objectives O_a for training. These are determined by a, which stands for information, experiences, predispositions, etc., on the part of the initiator. At the next level of objectives formulation we come to a committee B appointed by the initiator A to spell out the objectives and formulate the training T.

Objectives O_b are presented after determination by b, which stands for the information, experiences, predispositions, etc., on the part of the committee.

The committee has in its turn been influenced by the initiator's objectives, O_a.

At the third level, where the formulation of objectives directly determines the execution of training, c stands for the course directors and teachers. The first training program, T, is determined by O_c.

The following sequence of training programs are in turn determined by the immediately preceding a) objectives and b) training programs.

When the model is applied in the specific case, we accordingly find that the training objectives develop continuously.

Consequences for evaluation

We have earlier discussed the connection between training objectives and evaluation and established that the objectives must determine the content of evaluation. In the light of the foregoing discussion on the objectives-formulation model, the next question is: Which of the demonstrated objectives shall determine the evaluation content?

To judge from the literature in this field, the following cases,

$$O_a = O_b = O_{c\,1} = \ldots O_{c\,n} \longrightarrow T$$

and $O \longrightarrow T$,

appear to be the only ones that researchers have considered, whether consciously or not.

There is every reason to feel dubious about these two alternatives. It would appear more likely that the training objectives shown in the different stages of Fig. 1 are subjected to influence and changed accordingly. The change lies not only in their becoming more specific the closer they approach the execution of training, but also in their actual content.

The consequences for evaluation research are bound to be substantial. Thus it lies ready to hand to assume that many investigations which have studied training results in terms of global attitude changes (e. g., influence in a "democratic" direction, which has been a frequently stated objective, especially in Human Relations courses) have postulated an oversimplified connection between training objectives and execution. In such cases the initial objectives may have contained preferences influencing the type of course: to make the participants more personnel-oriented and less production-minded, to prevail on them to delegate responsibility, to make them more concerned about cooperating with their subordinates, etc.

Similar descriptions can be readily subsumed under one main objective: to make the participants less authoritarian and more democratic in their exercise of leadership. To deal with such a global objective, a global instrument for measuring attitudes (examples: "How Supervise?" and "Oslo-Yale Scale") has been employed to determine training results.

According to fig. 1. O_a should stand for the objectives: to make the participants more personnel-oriented and less production-minded, to prevail on them to delegate responsibility, to make them more concerned about cooperating with their subordinates, etc. These objectives ought to have their corresponding criterias in job-related measures, M_a.

O_b should stand for the objective: to change the participants' attitudes in a direction towards less authoritarian and more democratic attitudes.

Here it seems natural to regard a global instrument for measuring attitudes as a corresponding training-related criteria, M_b.

If we then let O_c stand for the more specific objectives which immediately precede and determine the training, T, it must be understood that we also could establish another set of measures, M_c, corresponding to O_c.

Within this chain of pairs of objectives and corresponding evaluation measures it must be very important that the researcher is aware of that his choice between them among other things determines what kind of information he will get and what conclusions he can draw out of his evaluation results.

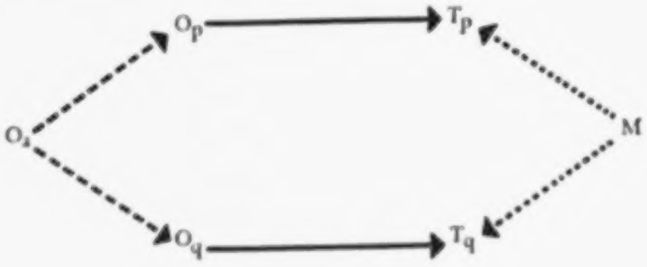
The results can directly describe how training has succeded in attaining the objectives which the used measures correspond to. How training has succeded in attaining the other types of objectives can only indirectly be described.

It follows that a number of evaluation studies have perhaps made only apparent provision to control the objective-evaluation connection. This would seem to explain, at least in part, the depressing results which are often reported.

If the researcher determines the methods and content of evaluation with reference to training objectives which are at great variance from the objectives that actually determine training content, the results may well indicate no desired change of any kind in the participants. In point of fact, the course may indeed have produced considerable—and desirable—changes. However, these are unobservable because the objectives selected for evaluation has led to the use of inappropriate methods for the evaluation of the traing program as such.

It might be interesting to apply our line of reasoning to that type of studies which seek to compare the effectiveness of different training programs with reference to what appears to be an identical objective. Here researchers have reported findings which suggest that one program is more effective than another for changing the attitudes of participants in a desired direction.

The relationship between objective and evaluation in this type of study may be illustrated in simplified form as follows:



where O_a stands for the common initial objective;
where O_p is the actual objective which determines training (T_p);
where O_q is the actual objective which determines training (T_q); and
where M is the common measuring instrument (example: "How Supervise?").

If we find that O_p diverges more than O_q from O_a it is probable that T_p will also diverge more than T_q from O_a.

If we assume that M is equivalent to O_a, it follows hat M will correspond less to O_p than to O_q.

In an analysis of objectives, therefore, the experimental design will already tell us that the objectives which define the content of both training programs will be discrepant. In that case the grounds for evaluation will not be comparable.

If, moreover, we find that the actual objective of the one program lies closer to the measuring area which our instrument covers, there will arise a systematic error in the experiment which prejudices the results in favor of this program.

In methodological terms, of course, the choice of objectives for purposes of a particular evaluation are both interesting and important. The most interesting and important thing, however, is to clearly analyze and account for the choice one has made, since this will bear heavily on interpretation of the results obtained.

From the foregoing discussion we may generally conclude that it is reasonable to assume the existence of several groups of objectives which more or less influence and interpenetrate one another, and which culminate in training objectives that directly determine course content.

We have also called attention to the necessity in evaluation research of analyzing and mapping out these objectives. There should be awareness of the group or groups of objectives which the training criteria are meant to evaluate.

The next step, then, is to discuss this question: What are the objectives which are most relevant for the evaluation?

It is scarcely possible to take up this question without giving simultaneous consideration to choice of training criteria. The latter question will be dealt with here only insofar as is necessary to enable us to pursue discussion of the objectives problem.

Perhaps the easiest way to discuss the choice of training objective for evaluation purposes is to proceed on the basis of models which can be characterized as antipoles of one another.

The two cases may be illustrated as follows:

$O_a \dashrightarrow O_b \dashrightarrow O_c \dashrightarrow \ldots \dashrightarrow O_n \longrightarrow T \dashleftarrow M$

The one case may be expressed as O_a — — M

and the other as O_n ——— M

O_a — — — O_n are the objectives which precede training, O_a refers to initial objective(s). O_n stands for objective(s) which immediately precede training (T) and accordingly determine it.

In the first case evaluation aims solely at the initial objective(s), O_a, and criteria as measures of training effectiveness. In its simplest form O_a can be taken to mean "developing the participants into better executives". The researcher, taking this statement of objective at face value, focuses his attention on finding variables for measuring success, which he can then use in his evaluation to see whether the training has wrought changes in the participants in terms of the objective initially formulated.

In the second case evaluation aims solely at the objectives, O_n which directly determine training. The researcher looks for criterion variables which directly relate to these objectives. In the first-mentioned case, the tendency is to favor job-related criteria, while in the latter case training-related criteria are the most common.

Even though the literature on evaluation of management training does not discuss choice of objectives, it is nevertheless possible to discern different points of departure implicitly taken by the researchers. Bakke (1959, p. 11) may be said to belong to that school which works principally after the first model. We quote his description of the objectives of the top management course he studied.

"The purpose of the Foundation was to make possible the carrying on of research related to administration and to support efforts which would make administrative practice more effective. As an implementation of this last purpose they decided to set up a "course" for top- and close-to-the-top managers. A quotation from the announcement of their course will indicate the wide range of needs they hoped to meet in part.

The realistic need for this course should be self-evident. The business leaders' work and problems are becoming increasingly more varied and difficult. The rapid development in the technical, economic, and political areas catch a company up in a dynamic pattern of change. A company which wants to keep abreast of this development and improve its position must have leaders who are alive to the tendencies of the times. They must develop their capacities for leadership, they must broaden their fields of knowledge, they must learn to be aware of and understand the techniques and tools one can use to make their administrative practice effective and purposeful. High skill in some special field is not enough, in and of itself. The higher they rise in the company organization, the greater the demands on their capacity for executive leadership."

Bakke then designs criteria of training effectiveness with reference to the desiderata stated by program sponsors. He formulates two groups of criteria which are to answer the following questions:

"Group I: Has the course produced results consistent with the expectancies and satisfaction levels of those who have invested time, money and supporting activity in the course?

Group II: Has the course produced results which are consistent with what it would be expected to produce if it were to satisfy standards suggested by the general requirements for organizational effectiveness and personal development?"

To illustrate how Bakke (op. cit. p. 16) builds up his training criteria in detachment from training objective and content, we cite his comments on a more detailed description of criterion variables related to organizational processes:

"The question is not merely whether the course is so planned that all these organizational processes are taken up for consideration, but whether the response of the 'student' and other interviewees indicate that effects have been felt on the carrying out of tasks incorporated in these processes."

We have not been able to find a researcher with a viewpoint diametrically opposed to Bakke's. There are some, however, who have at least given indirect expression to a different approach.

Thus Argyris (1956, p. 34) observes: "It may be said that even if accurate 'before' and 'after' studies existed, *to be of any value, they clearly would have to relate the 'after' change (or no change) to some particular phase of the course.*" (Italics added.)

Andrews (1957, p. 67) underlines the importance of first defining objectives. "We should look at the way in which effectiveness can be *defined* and *increased* rather than *measured.*" In the same article he recommends taking a more individualized look both at the formation of objectives for management development and at the analysis of any one program's results.

In Fig. 1 we have sought to illustrate the existence of several groups of objectives and have also discussed dissimilarties between them. Further, we have described how different researchers look at the connection between training objective and evaluation, and how this connection can be utilized or taken into assount. We can also see how different points of view in this regard have consequences for research aims, design, and so on. If one accordingly picks out the first group of objectives along the time axis, which in its undifferentiated form might be expressed as "making better executives of the participants", it lies ready to hand in the study to try to establish the *effects* of training, and thereby make use of *job-related criteria.* But if one selects the group of objectives which immediately precedes a course and determines its content, it lies ready to hand to establish training *results* as a research aim, and thereby make use of *training-related criteria.*

It was noted in Chapter 1 that our own study has selected the second set of criteria. In consequence thereof, we shall *relate our evaluation to the training objectives which immediately precede and determine the content and execution of training.* At the same time, we array ourselves with those researchers who stress the importance of considering the differentiated training needs of participants. A corollary of our approach is that we shall not primarily be concerned with training results in terms of mean value shifts on pretest-posttest. Instead, we elect to study the relationship between changes and individual training needs. The latter will be indirectly expressed in individual differences with regard to a number of background factors.

Given the resolution of focus as defined above, we have carried out an analysis of objectives which is based on (1) a review of the details comprising the program of the course selected for study as well as other source records; and (2), and more importantly, on a series of interviews with 17 persons representing those (chiefly program directors and teachers) who were chiefly responsible for the formulation of course objectives. The interview study is described in Chapter 6.

Chapter 3

RELATIONSHIPS BETWEEN BACKGROUND FACTORS AND INITIAL ATTITUDES – CHANGE

In the previous chapter, we discussed an essential purpose of this study: namely, to analyze training results in relation to the objectives which immediately precede and determine the content and execution of training.

The present chapter will deal with another methodological aspect which has fundamental bearing on the study. This is the relationships between background factors on the one hand and, on the other hand, the initial attitudes and changes wrought in them by the training course.

Evaluation research in management education has given primary consideration to the personal backgrounds of subjects or experimentees in connection with the matching of experimental and control groups. Efforts have been made to keep constant differential-psychological variables, background variables relating to the job situation of subjects, etc.

Studies which have sought to relate degree of change directly to the individual background factors of those taking part in management training are rare. This is surprising when one thinks of the great deference paid to (say) differential psychology in research concerned with areas closely allied to training, such as perception, learning and motivation. For examples see Björkman (1958, pp. 81—82), Hovland Janis & Kelley (1951, pp. 592), Anastasi (1958, p. 353), Postman, Bruner & McGinnies (1948), Carpenter, Wiener & Carpenter (1956), Gagné (1964, p. 20).

DuBois (1962, pp. 66—67) has described the situation for educational research in these words:

"To many investigators in the field of learning, individual differences among the organisms that are the subjects in their studies are chiefly a nuisance. Groups of subjects, rather than single individuals, are used only to permit averaging of results.

While the psychological study of individual differences has its primary applications in personnel placement, it has another important field of potential application in the study of training. If characteristics that vary from individual to individual are ignored, investigations of learning are limited to the study of a relatively narrow range of topics, chiefly the effects of variations of internal drives and of external stimuli, including rewards and reinforcement, on changes in behavior.

In the study of the acquisition of simple acts by relatively simple organisms, this limitation may not be particularly serious. The study of individual differences among simple organisms has not been a major preoccupation of contemporary psychologists. However, in the study of complex human skills it appears likely that a major portion of the variance of interest to psychologists is directly or indirectly related to individual differences in prior skill, attitudes, interests and personality characteristics. The impact of individual differences is such that human variation must be taken into account in the study of most of the problems of interest to educators and others concerned with human learning. These problems include the identification of the individuals who may be trained, the determination of areas of training appropriate to each individual, and the interaction of incentives and training methods with personal characteristics of trainees. In general, the level of initial skills is of interest chiefly as a variable to be controlled, but it is obviously a most important source of variability in the learning situation as a whole."

Within the field of attitude measurement great interest has been shown in the study of attitudes in relation to background factors. Some researchers have even made use of background variables to validate their measuring instruments for the determination of attitudes. Thus Hammond (1948) and Weschler (1950), among others, have sought to validate Error-Choice, an indirect attitude-measuring technique, by having populations with "known attitudes" serve as experimental groups. In Hammond's case, the attitude referents consisted of "Labor

Questions" and "Russian Questions"; the experimental groups were made up of older businessmen and trade union officials. When experimental groups with "known attitudes" are selected in this way, the assumption is that different environmental situations may covary with different attitude biases.

A large number of researchers have demonstrated how background variables covary with attitudes. Among those in Sweden who have considered this problem at length are Husén (1946, pp. 230—285), Härnqvist (1965) and Rubenowitz (1963).

Hovland, Lumsdaine & Sheffield (1949, p. 147) describe comprehensive studies of the relations between background factors and change as a result of showing films. "At the outset of the orientation film studies, analyses of the possible influence of a number of demographic factors were routinely made. These analyses were undertaken in the expectation that men's knowledge and opinions would be significantly related to characteristics of their personal history. But the studies showed the surprising result that region of birth, religious affiliation, marital status, Army rank or grade, length of Army service, age (within the adult range represented by the Army population) and several other personal-history items introduced in special studies showed few consistent or significant relationships to initial knowledge and opinion, and were almost uniformly unrelated to the effects of the films. The one relationships which emerged clearly and consistently was the relationship of both information and opinion to intellectual ability, as indicated by AGCT score or years of schooling completed."

Two findings by these authors are of particular interest here: first, subjects of higher educational attainments had higher fact and opinion scores initially; and second, the same subjects also showed the most positive changes as a result of the film showings. Unfortunately, the fact that other background data do not show the same degree of covariation with initial scores or effects of the films makes it difficult to draw conclusions: we are not given more details about these background variables, nor are we apprised of the principles which have governed their selection.

It may thus be observed that researchers have consistently, sometimes almost axiomatically as in the matching of experimental group, taken account of background factors in studying perception, learning and motivation, as well as in regard to training, attitude measurement in general, and attitude change. In the evaluation of management training, the interest in background variables has chiefly concentrated on trying to obtain comparable groups for experiments.

None the less, some researchers in this field have come round to the idea that background variables ought to be more directly included in their array of variables—this not only to explain the possible effects of training, but also to help explain the premises and causes of change or absence of change as a result of management training. Smith (1963, pp. 104—112) suggests as much in discussing studies concerned with sensitivity-oriented leadership training in Human Relations: "The changes resulting from non-directive training will vary with the personality of each individual."

Neel & Dunn (1960, pp. 358—360) are of the same mind when they employ psychological tests towards predicting the degree of change brought about by the human-relations training of supervisors. They summarize their findings in these words: "It can be concluded that in this preselected homogeneous group the use of the How Supervise? Scale and the F Scale predicts with a high degree of accuracy those who are able to successfully complete a supervisory training course." Some researchers, among them Andrews (1957) and Quinn (1961) touch on the problem indirectly when they discuss the importance of having companies assign the right categories of executives to the right courses. A direct observation is made by Harris & Fleishman (1955, p. 25), who detected a wide range of individual differences even though pretests and posttests yielded negligible shifts in mean values. This finding induced them to make the following reflection: "From the point of view of training evaluation research, one cannot assume that insignificant changes in group means among trained foremen are indicative of *no* training effects. The problem appears more complicated than that. It raises the possibility of differential effects according to the individual and the situation in which he finds himself. Future training research might well be directed toward finding the personal and situational variables which interact with the effects of such training."

Kile (1963) has studied the relationships between certain background variables and the effectiveness of two methods of training supervisors in human relations, the one sensitivity-oriented and the other more conventionally based on lectures and discussions. Is it not reasonable to assume, Kile asks, that all the experiences gained and impressions formed on the job play an essential role, considering the short time of course attendance? Kile also provides empirical proof of covariation between these background measures related to the participants' experience and satisfaction of need in the job situation on the one hand, and success in training as measured by degree of desired changes on the other. After analyzing the results of training, as measured by the "How Supervise" scale, in relation to the background variables of age and intelligence, he concludes (op. cit., Bind III, pp. 19) that the more intelligent participants can profit from training and be changed by it, regardless of the method used; the less intelligent, on the other hand, gain much more from the sensitivity-oriented method than from the lecture-discussion method.

In another study, Kile (1966, p. 34) also seeks to give a framework for evaluation, in which he includes three dimensions: background variables, training-process variables, and evaluation variables. An essential first step, he says, is to explore each dimension as completely as possible. The researcher can then justify and select the limitations which must be made. It should be noted that Kile interprets background variables to embrace not only the personal characteristics of participants in the broad sense, but also the background related to training, the trainer, etc. Our own study is thus already circumscribed in the sense that we take background variables to refer only to those which are participant-related.

Miner (1965, pp. 166), in reporting on the studies which employ his Sentence Completion Scale to evaluate management education programs, has tested the ability of different background variables to predict training results. He found no correlation between results (change as measured by the MSCS) and such variables as intellectual competence and learning, age, grade level and performance levels. However, he did arrive at statistically significant correlations between change and certain personality measures. According to Miner, these latter findings surprisingly resemble those reported by Papaloizos (1962).

So far in this chapter, we have been culling different fields related to management education for examples of axioms, theories, hypotheses and assumptions which would support a general hypothesis acknowledging the importance of background factors for training evaluation research. In the light of our examination, it is the more regrettable that such a large body of this research should have refrained from illuminating this problem complex.

As mentioned earlier, our own study has elected to focus primarily attention on background variables and their relationships with initial attitudes and change. Not only that, but there scarcely seems to be any point in studying the change problem in the first place without at the same time considering a third group of relationships, namely that between initial standing and change (just why we think so will be explained in Chapter 4). Our study will accordingly be especially concerned with the:

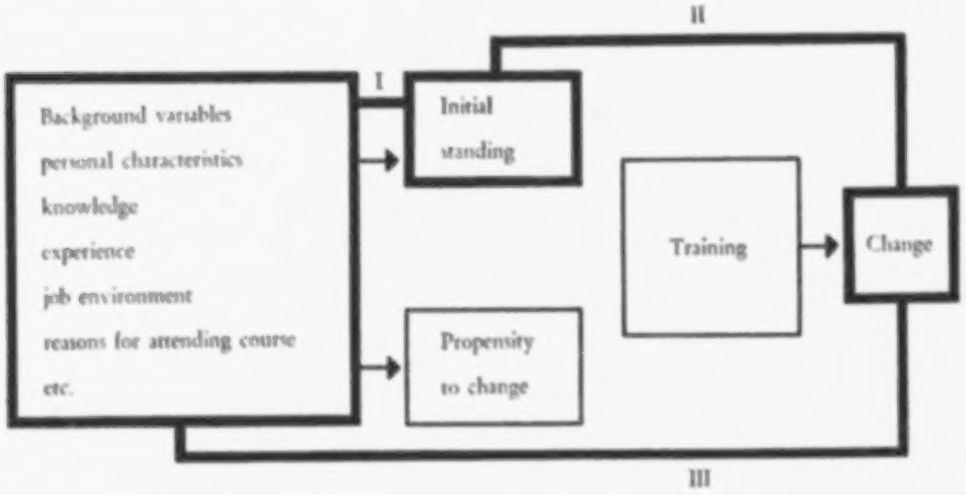
1. Relationships between background variables and initial attitudes
2. Relationships between initial attitudes and change
3. Relationships between background variables and change.

Our point of departure is the following:

The background of participants, their personal characteristics, knowledge, experience, job enviroment, reasons for attending the course, etc., have given (1) attitudes or absence of attitudes in those areas which the course seeks to influence; and (2) a propensity to change, i. e. a readiness or rather a series of "readinesses" to perceive, interpret and let oneself be influenced by the stimuli of which the total training consists.

Figure 2 is meant to illustrate the foregoing discourse and to specify the three types of relationships which the study proposes to clarify.

Fig. 2. *Relationships within the evaluation process under study.*


II
I
Background variables
personal characteristics
knowledge
experience
job environment
reasons for attending course
etc.
Initial
standing
Training
Change
Propensity
to change
III

"Propensity to change" and "training" are to be regarded as intervening variables, and as such will not be direct objects of study.

Given the concepts of "Background variables", "Initial standing" and "Change", we can proceed to formulate our three main hypotheses:

I Initial attitudes and background variables covary

II Initial attitudes and change covary

III Change and background variables covary.

A basic problem which obtrudes here, and one that is well-known to the behavioral scientist, involves the choice of variables—in this case background variables. Ekman (1952, p. 73) calls attention to the great variety of variables in differential psychology: "There would clearly seem to be as many accessible variables as there are possible methods of investigation. It is virtually self-evident that the number of investigative methods can be made infinite, and we must therefore literally reckon with an infinitely large number of different variables."

In the empirical research situation, the manipulability of a large number of variables is sharply curtailed by practical considerations: technical, administrative, financial and motivational. However, even these limits are not enough: difficult decisions must still be made as to the merits and drawbacks of different variable selections.

Our selection of background variables was influenced to some extent by the findings of research in respect of similar problems in other areas, attitude research in particular. However, the chief determinant of our final selection was the result of our own fairly comprehensive interview survey which preceded the main investigation. The respondents consisted of 58 graduates of earlier courses. The details of this pilot study are given in Chapter 7, which also presents the subhypotheses on the relationships between background variables and initial standing-change, which we felt we could formulate in spite of the study's exploratory character.

Chapter 4

ATTITUDES AND ATTITUDE CHANGE

In Chapter 1 we specified the limits imposed on the direction and scope of this study. We then declared that we would evaluate training results in terms of attitude changes. This limitation is a result of a training-needs analysis carried out in a pilot study(see Chapter 6).

Our concern in this chapter will be to take up different components of the concept of attitude change, so as to clarify the frame of reference governing the empirical investigation. It is convenient here to classify our discourse under four heads:

Definition of the concept, attitude
Attitude change
Methods of measuring attitudes
Technical problems in the measurement of psychological change

Definitions of the concept attitude

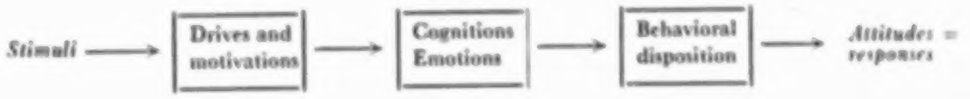
For lack of a common body of theory on which to draw, behavioral scientists are highly inventive in generating full-blown theories or in adumbrating them. This is clearly illustrated by the widely diverse definitions applied to one and the same concept. Intelligence has certainly been one such concept at least among psychologists during the earlier part of this century. Another example, and one moreover where inventiveness continues to flourish, is learning. And the same can be said of attitudes. Different the theories about and definitions of attitude still cause heated discussions among researchers. It will be sufficient for our purposes to establish the following points of general agreement:

— an attitude is an intervening variable between stimulus and response, and as such is not available for direct observation;
— an attitude is not innate but is learned;
— attitudes are "inferred from more or less consistent characteristic modes of response to a given object or class of objects" (Sherif, Sherif, Nebergall, 1965, p. 171).

Opinions differ as to what the attitude concept ought to contain in addition to the evaluative element. Some researchers draw the line at this point, others add a cognitive element, while a third group also includes perceptual and motivational elements.

In this respect we should like to concur with Sherif et al (op. cit., p. ix), who write: "We must also abandon the artificial distinction, which found its culmination in Faculty Psychology, between 'cognitive' and 'affective-motivational' processes. Unfortunately, the distinction is still kicking around. Unless special pains are taken to restrict judgment (a 'cognitive' process) to discrimination of two objects, the choice or comparison process involves internal standards. As a rule, the choice of alternatives among socially relevant items involves comparison with standards which have effective and motivational value to the person. Thus labels of 'cognitive' vs. 'motivational' become a game of classifying in pigeon holes."

An alternative approach is indicated by Asplund (1966, p. 12) in his suggested operational definition, where attitude is referred to manifest responses instead of to an intervening variable. Asplund illustrates his discourse with the following paradigm:



If we tie in with the operational definition above, we would naturally not be interested in influencing an individual's manifest responses (attitudes) as such, for instance by asking him to take a stand towards items in an attitude scale. We are interested in influencing his cognitions and emotions, and hence his behavioral disposition. It is assumed that we shall then be able to gauge this influence from the manifest responses. By comparing these responses, say in the form of results on an attitude scale before and after an act of influence, the difference should give us a measure of attitude change.

A limitation we have imposed on our study (Chapter 1, p. 18) is that we are not trying to find out which stimuli in the act of influence produce which result within the scope of each training objective. Instead, we shall focus our attention on the receiving stage in the communication process.

Our analysis of attitude change accordingly proceeds with reference to a total body of stimuli, consisting of all the stimuli which enter into training. Some of these stimuli are structured and determined by the formulated training objectives; others are not. The latter *may* operate in the same attitude-changing direction as the former, but they *may* also work in the opposite direction. In thus abstaining from the analysis or control of the stimuli flow aimed at the participants, we are deliberately coarsening the experimental situation. This means that we also make the assumption—which is ipso facto wrong—that all subjects are being reached by the same set of stimuli. We thus disregard the fact that certain arrangements in the practical training situation, such as group discussions, will necessarily give rise to differences in this respect.

The ways in which a participant perceives, interprets and lets himself be affected by training can be specifically discussed in terms of how different background variables covary with attitude change.

Hereditary and environmental factors give rise to sets of needs, motivations, emotions and cognitions, which in turn culminate in a behavioral disposition. Against this background of extremely complex and near-infinite variability in terms of differential psychology, different researchers have discussed the propensity for attitude change on dissimilar theoretical grounds. As a starter, probably all would agree that we must reckon with selective perception not only because of different characteristics of communication, but also because of the individual's intellectual capacity, needs, knowledge and behavioral disposition—all of which add up to initial attitudes and propensity to change (see Fig. 2).

On the other hand, opinions are sharply divided as to the relationship between propensity for change and degree of communication—attitude discrepancies (see Sherif et al, op. cit., p. 168). Here again, the disagreement no doubt stems in part from the use of different theoretical grounds for discussion; in part, too, this is because the empirical data they cite in support of their views is probably capable of describing no more than very limited aspects of a tremendously complex problem area. The purely statistical-methodological problems involved in all empirical research on psychological change would seem to have accounted for not a little of this complexity (we shall have reason to advert again to this aspect later on in this chapter). We have interpreted the conflicting views as a sign that we cannot, at least not at the present time, see any generally verified hypotheses to explain the relationship between propensity for change and communication-attitude discrepancies.

Methods of measuring attitudes

When McNemar (1946) published what has since become virtually a classical critique of opinion and attitude surveys, he based his appraisals on the more widespread use of systemized attitude measuring during the previous 20 years or so. Even though his attack was not allowed to pass unchallenged (see Conrad, 1946), he did point up a number of problems which perplexed researchers then and, indeed, still do 20 years later. True, the controversy raging around the "neutral point" may be less heated today and the problem of unidimensionality has become easier to control, thanks largely to the greater use of multivariate methods of analysis. But when we look at problems of validity and determination of attitude change—two fundamental aspects of attitude measurement—the same type of criticism can be levelled against the usefulness of different measuring methods. This may be partly due to the already noted lack of a common body of theory relating to the attitude concept itself. It may also be due to the poor congruence between subtle discussions and definitions of the attitude concept on the one hand, and the mostly crude and simple questions or assertions against which attitude scales are applied. This has been pointed out by Campbell (1950, p. 31) and Himmelstrand (1962, p. 304).

When we set forth to measure attitudes, the selection of measuring methods confronts us with a series of exercises in weighing pros and cons. Shall we go in for disguised or non-disguised, structured or non-structured methods? Single questions or scales? If scales, what type? In order to make up his mind on such matters, the researcher has to ask a banal if admittedly fundamental question: How do I find the measuring methods which will yield the most valid results—taking into account the research purpose and design, the experimental situation, the experimental population, and my own knowledge experience and bents?

In the following, we shall discuss questions which arise in the selection of measuring methods, and in connection therewith describe the stands we have taken on the basis of our own study's premises.

As we noted earlier, an attitude is generally regarded as not directly observable but can be measured by way of responses to stimuli. The central issue in attitude measurement then becomes: To what extent are these responses valid measures of attitudes? (We can of course operationally define attitudes as manifest responses—see page 48—but then the central question is the extent to which observed manifest responses or attitudes are valid measures of behavioral disposition.) The difficulties of finding predictive validity criteria, the poor coordination between such criteria and the findings of attitude studies, and lack of interest in trying to establish these criteria have engendered a great deal of criticism, much of which impugns the value of attitude measurement in the first place (see McNemar 1946, Bray 1950, Cattell et al 1950). This earlier criticism tended to take a biased view of the validity concept in terms of predictable behavior. But even later, when a more differentiated view of the concept became more widely accepted, and such concepts as construct validity have become generally known and used by psychologists and sociologists (see for example Cronbach & Meehl 1955), the essential substance of past criticism remains unchallenged. There are admittedly exceptions; thus Campbell & Fiske (1959), who draw on later models for validity thinking, make an interesting analysis of the interaction between reliability, traits and validity.

Present-day discussion of validity in attitude measurement seems to indicate every bit as urgent a search for validity criteria in the form of overt behavior. And there is the same tendency to invalidate the results achieved by measuring instruments when these either relate poorly or not at all to validity criteria.

Validity criteria may be roughly divided into three groups, arranged in order of proximity to directly observable behavior.

The first group subsumes criteria of the following type: Cheating behavior after the Hartshorne-May model (see Freeman & Ataöv, 1960), "Willingness to sign a petition" (Kamenetzky et al, 1956).

The second group comprises more indirect criteria, often obtained by means of questionnaires. It is assumed that opinions and attitudes ought to have correlates in overt action. Examples are given by Pace (1950), who constructed a series of activity scales corresponding to opinion scales, and Cattell et al (1950), who purposely looked for criteria of this type as well as certain physiological measures (such as PGR).

The third group of criteria makes use of subjects for experiments whose attitudes are known to begin with. Thus the validation of a measuring instrument is made to depend on the extent to which the results of measurements succeed in discriminating between (say) two experimental groups having contrary attitudes (see Levine & Murphy 1943, Hammond 1948, Bray 1950, and Wechsler 1950).

A much-used method of "validating" new or untested attitude scales is to relate them to known, well-established scales. An example is provided by Osgood, Suci & Tannenbaum (1958) who after noting high orders of correlation between Guttman-Thurstone scales and scales based on the evaluative factor in the semantic-differential method, held that the latter were attitude-measuring. Several other studies, more or less successful in the sense of having obtained high-order positive correlations, have been conducted with this method; for examples, see Kimbrough & Cofer (1958), Kamenetzky et al (1956) and Bartlett & Wrightsman (1960).

In the above-named studies a special stimulus-response set is the designated validity criterion and overt behavior is taken to be the true expression of attitudes. This assumption must be skeptically viewed except in regard to personnel selection or a similar situation, where attitude measurement is used towards predicting desirable behavior. In our opinion, the division of stimulus-response sets in terms of criteria-noncriteria is rendered fruitless by poor reliability and absence of unidimensionality in measurements, by effects of faking, social desirability, lack of anonymity, etc.—all of which may affect the results both of attitude measurements based on questionnaires, etc., and of measurements of overt behavior. Probably the most rewarding approach to the methodological study of attitude structure at the present time is the construct-validity concept adopted by such researchers as Campbell and Fiske (op. cit.) and Rubenowitz (1963). It has not been possible to adopt construct validity for our study. The more relevant task for us has been to select one or more methods of measurement on the basis of logical validity.

A rich flora of measuring techniques has evolved since Thurstone advanced his theories in 1929. Certain types of scales, such as the Thurstone, Likert and Guttman, have become standard equipment in the arsenal of psychologists and sociologists, serving a wide variety of purposes. In the process a sizable body of experience on the usefulness of these scales has accumulated. They have also been the focus of much methodologically oriented research. For natural reasons, other methods (e.g., the projective) have been employed more sporadically.

Our study is primarily interested in analyzing the covariation between background factors and initial standing, background factors and change, and initial standing and change. In order to reify the general hypotheses we seek to test, we have analyzed the objectives of training, and from these extracted a number of specific objectives. To permit us to study the above-mentioned correlations, we have secured a number of attitude areas within which we propose to subject these correlations to explorative studies.

Since we thus elected to work with as many well-defined attitudes as possible, our available choices of measuring techniques were sharply curtailed by time shortage and for practical and economic reasons. These limitations were imposed both on the scale construction work and on the collection of data.

As to choosing between disguised or non-disguised methods, we came out in favor of the latter. Disguised methods generally require a great deal of scale construction; see Campbell (1950). In our study, moreover, the testing situation was such that we had no reason to expect an appreciably positive effect from the use of disguised methods. The findings of a pilot survey made it evident that the subjects regarded the whole study as a research project, whose practical consequences would be to help improve the organization and execution of training. As far as we could judge, the subjects accepted assurances that the study would be confidential or felt that such assurances were unnecessary; they were given the clearest possible information about the study and gave the impression of extreme willingness to cooperate.

Having once made a commitment to non-disguised methods, it lies ready to hand to choose single questions when, as in the present case, many attitudes are to be measured. The relative merits of single questions and attitude scales have been discussed by many researchers. A summary analysis of the pros and cons of each has been given by Härnqvist (1956). In regard to single questions, he points out the impossibility of establishing a neutral point at which attitudes shift from positive to negative signs. Like Härnqvist, we need not get involved in this discussion since it has no relevance for our study, either. According to Härnqvist, the most important objection that can be leveled against single questions is on grounds of reliability. In the first place, there is reason to assume that single questions have low reliability precisely because they are *single* questions. Secondly, and citing Härnqvist's and our own study as examples, with both of them concerned to inquire into "systematic individual shifts in attitudes", no measure of reliability can be obtained by means of retesting. Härnqvist infers from the lower degree of reliability for single questions that their validity is probably lower, too.

A good case for the use of single questions, Härnqvist finds, is their practical applicability. He points out that scales demand much more effort, time and money in the scale-construction phase, and that single questions also take less time in the collection of data. For this reason the researcher who chooses scales often has to limit the scope of his project.

Another question taken up by Härnqvist in this connection concerns the use of single questions or scales in a research situation where one is interested in measuring attitude change. He cites the difficulties which encumber scales of the Guttman and Lazarsfeld type: namely, that their dimensionality may change because changes in scale structure may ensue between, say, a pretest and posttest. At the same time comparisons become meaningless unless the same scoring system is used on both occasions. It then becomes relevant to ask which date shall prevail for establishing the structure of a scale, the weights to be attached to individual items, etc.

Here Härnqvist touches on a central question in attitude-change research to which subsequent studies have increasingly adverted; see for example Bereiter and Lord (1963). This question also bears heavily on our study and we shall reconsider it later on in this chapter. All we wish to emphasize here is that the problem cannot be avoided by renouncing scales in favor of single questions. The problem is there in full force, but with this difference: if single questions are chosen, there is no way of finding out whether structural changes in the tests have occurred or not.

We did not feel compelled in this study to decide either between formulating single questions or constructing scales for each of the attitude objects. The adoption of scales would have imposed an enormous work load and required access to subjects and testing opportunities which were in fact non-existent. None the less, a means for taking advantage of scales is offered by general measuring methods. Only a few years after Thurstone had worked out his method, Remmers & Silance (1934) attempted to construct Thurstone scales that would be generally applicable to broader fields of research. Remmers also succeeded in demonstrating high orders of correlation between such general scales and the scales designed for specific attitude objects. A relative newcomer is the semantic differential method developed by Osgood et al (1957), where the evaluative factor consistently obtained is held to constitute a homogeneous attitude factor. Osgood and his associates have considered this method to be well suited for the construction of general measuring instruments, which has also been demonstrated empirically (Jerkedal, Gärdin & Mårdberg, 1966).

A comparison of the respective merits of single questions and the semantic-differential type of general scales for purposes of our study discloses the following points in favor of the latter: semantic differential scales lend themselves to estimates of their reliability in terms of internal consistency. Further, the use of this type permits a broader differentiation of responses. The advantages of single questions derive from logic and face validity. The content of each datum is easier to structure and can be expressed more directly in congruence with the meaning of the training objectives, with the result that communications between subjects and experimenter are less exposed to interference. Both measuring methods have great practical applicability in the scale-construction phase and in the collection of data.

Given the foregoing considerations, we have elected to employ both methods in parallel for the collection of data. In making this decision, we did not intend to process data from both series except in cases where considerable differences in the results would emerge. Should we obtain high orders of correlation between semantic-differential scales and single questions, we would be chiefly interested in results from the former with reference to the possibility of being able to estimate the reliability of measurements for this method. Should we obtain low or negative correlations, any of several causes might be responsible: the low reliability of single questions, defective face validity or logical validity in the semantic differential method, the response set of both methods, or simply that the two methods measure different things. In the event such a situation arose, it was our intention to draw on the results of both methods for purposes of the next stage, the testing of hypotheses.

Technical problems in measuring psychological change

We have yet to consider the difficult technical problems entailed by the study of psychological change. Bereiter (1963, p. 3) gives a telling description of these problems: "Although it is commonplace for research to be stymied by some difficulty in experimental methodology, there are really not many instances in the behavioral sciences of promising questions going unresearched because of deficiencies in statistical methodology. Questions dealing with psychological change may well constitute the most important exceptions. It is only in relation to such questions that the writer has ever heard colleagues admit to having abandoned major research objectives solely because the statistical problems seemed to be insurmountable.

Such faint-heartedness is easy to forgive. Procedural decisions in the measurement of change assume, with discouraging insistence, the character of dilemmas, of choices between equally undesirable alternatives."

In spite of the above provisos, it is surprising to note so much research on psychological change reported in the literature. Just why this should be so admits of at least two explanations. To begin with, this subject is of tremendous importance for the behavioral sciences. For example, it would scarcely be possible to study education or attitudes without considering the role of change. By virtue of its significance both in theoretical and practical terms, psychological change would have to be researched extensively notwithstanding the methodological deterrents which intervene.

A second explanation, which would appear warrented by the perusal of many monographs, is that researchers in many cases simply avoid or belittle the difficulties with problems of change. When one reads monograph after monograph on evaluation experiments in management education without even the slightest mention of methodological problems in connection with change, it may reasonably be concluded that the researcher is either unaware of them or sufficiently aware of their difficulty to make it hardly worth his while to call attention to their very existence.

In the following paragraphs we shall discuss those change problems which have direct relevance for our own empirical investigation, with particular reference to those questions and hypotheses on which the investigation is based. The problems may be focused on the *change measure as such,* the *correlation between change and initial score,* and *change and its correlation with external variables.*

Even if we are not primarily interested in this work in the study of change as such—which is otherwise the preoccupation of most training evaluation studies when they seek to establish differences in mean values between "pretests" and "posttests"—this problem will none the less have indirect bearing insofar as it enters into our correlations.

Each change measure is the result of a subtraction in which "pretests" and "posttests" are included. When change is taken to mean gain, it may be expressed as

$g = y - x$
where g is the observed gain
x is the obtained pretest score
y is the obtained posttest score.

Lord (1963, p. 32) points out the well-known fact "that the difference between two fallible measures is frequently much more fallible than either". He gives a formula which determines the reliability of the change measure (gain) and stresses that the correlation between observed and true gain (r_{gG}) should be worked out at the start of each study to make sure observed change is not simply the result of chance fluctuations or so concealed by such fluctuations as not to merit further analysis.

Why is this line of reasoning seen to be so seldom applied to goal-oriented research on training evaluation, attitude change, and the like? Several explanations may be advanced. In many cases the instruments employed are of the type that do not permit reliability determinations in the first place. Then, too, researchers often work with a control-group procedure which enables them to subject measuring reliability to a rough control and to make allowance for entering biases.

Let us establish that it must be an urgent task of evaluation research to pay attention to the problems indicated here and to make an effort to estimate "true gain". At the same time we must unfortunately acknowledge that the possibilities for so doing are often limited. But what can be asked for in such cases is to have the researcher who abstains from making the estimate to give his reasons and add thereto a statement of the limitations which will necessarily apply to the interpretation of his findings.

In this context we shall touch on another problem related to change. It is what Bereiter (1963, p. 4) calls the "unreliability-invalidity dilemma". Like Lord he observes: "Undoubtedly the best-known 'fact' about change scores is that they are unreliable," adding, "It is also quite well known that this unreliability has two sources: unreliability in X and Y, and positive correlation between X and Y."

It follows that we can improve the reliability of change scores, first by increasing the reliability of pre scores and post scores, and second by lowering the correlation between X and Y. Bereiter's "unreliability-invalidity dilemma" arises in the second part. If a successively lower correlation between X and Y follows from our increasing the reliability of changes scores, it may be asked if greater reliability is not being obtained at the expense of validity. The question here is whether the low correlations between X and Y can be attributed to changes in the subjects or to changes having taken place in the measuring instruments in spite of the identical components they contain. Since this question is of great importance for our study and in view of Bereiter's own lucid formulation of the problem, we take the liberty of quoting him further (1963, pp. 12—13):

"A few examples will show the general locus of the difficulty. A test that measures arithmetic reasoning ability in children may measure only computational accuracy in the same children when they are older. Scores on a test in electronics given at the beginning of an electronics course may reflect mainly differences in prior acquaintance with electronics; by the end of the course these differences may no longer matter and scores will depend on learning ability in that subject. In these examples there is every reason to say that the tests measure different things on the two occasions. Nevertheless, the tests might give reliable scores on both occasions, and since there would be little correlation between pretest and post-test scores, change scores calculated from them would also be reliable and meaningless.

It would appear that the critical question is not whether a test measures the same thing at time one and time two. The critical question is whether, taking into account whatever we know about the meanings of scores at time one and time two, individual differences in change on the test are of any interest to us. In the examples of the arithmetic reasoning test and the electronics test, the answer would almost surely be no. If we are interested in growth in arithmetic reasoning ability, we shall need a test with a higher ceiling or else must deal with a more restricted age range. In the electronics course, interest would center in final attainment rather than change. But attitude change is a matter of interest in its own right. Social scientists are interested in what causes attitudes to change, and if some people's attitude change in one direction and others' change in the opposite direction under similar conditions, this makes the subject more interesting—at the same time that it lowers the test-retest correlation.

Within reasonable time restrictions, changes in personality and attitude characteristics can probably be most legitimately treated as change variables. When, in a given situation, people start out at widely differing points and change in different directions and amounts, one is likely to be more interested in the variables that account for the changes than in the variables that account for the final level."

The situation described by Bereiter, where change may be legitimately treated as a change variable in the true sense, accords with the design of our own study. Thus we are not primarily concerned to establish changes wrought by training by means of, say, shifts in mean values, but rather to study change in relation to the background characteristics of participants.

This approach leads us naturally over into the two other main problems of change: change in relation to initial score and change in relation to external variables.

Problems relating to the correlation between initial scores and change have been treated from various angles in the literature. Thorndike (1924) is believed to have been the first to observe how this correlation contains a spurious negative element because errors of measurement in the initial scores enter into both elements, but with opposite signs. Thomson (1924), Zieve (1940), Garside (1956), Bereiter (1963) and others have further explored this matter in statistical terms and offered suggestions for the necessary corrections of this bias.

Other researchers have adopted a more global approach, but with simultaneous consideration of both statistical and pedagogical factors. Dressel & Mayhew (1954, pp. 247—248) note that the working out of correlations between initial scores and change consistently seems to produce the following results:

low initial scores—high change
high initial scores—low change

These results are by no means unusual and have given rise to a great deal of speculation. The possible explanations suggested by the authors are:

"1. *A 'ceiling' effect,* by which is meant that initially high scorers simply have a reduced possibility for gain. The importance of this was to some extent refuted by the fact that the same pattern was found even with certain tests for which even the highest pre-test score was far from a perfect performance. Even so, something of these effects must be present.

2. *A regression effect,* or tendency on retesting to move toward the population mean. On a chance basis there is more possibility for low

scores to be higher than to go lower and for high scores to drop rather than to gain. Unquestionably this factor is involved.

3. *A focus of instruction effect,* that is, that instruction may be aimed at the average or below-average student rather than at the able individual. One study in the science area in which the largest gain found was for a special section composed of the most able students is consistent with this possibility. Comments from students interviewed on a number of campuses and classroom observations also give credence to this as a contributing factor.

4. *Familiarity or unfamiliarity with terminology and concepts.* Students with low scores may be unfamiliar with the vocabulary or concepts used in a test even though a definite attempt was made to minimize this factor. The gain for low pre-test students may then be more a gain in knowledge than in the ability supposedly measured by the test, whereas the high pre-test student must make his gain almost entirely in the ability itself. Content-oriented instruction would then favor the low pre-test group.

5. *Differential motivation.* This factor is conceived of as operating in two somewhat different ways. Able students, being somewhat more conscientious, may apply themselves when tested at the beginning of the year to a greater extent than the less able student. It the test at the end of the year is not used for grading, the more sophisticated near-sophomore may take it less seriously and refuse to spend much time on the more difficult questions which would serve to increase the score of the more able students. This motivation was also seen as operating to magnify institutional differences since some student groups are more habituated to and appreciative of attempts to evaluate the effects of education."

An article by Philpott (1945) considers the significance of regression effects for the interpretation of results from pedagogical experiments. He shows how conclusions of importance for practical educational work have been erroneously drawn because the experiments did not take the regression effect into account.

In their studies on mass communication (included in *Studies in Social Psychology in World War II*), Hovland, Lumsdaine & Sheffield (1949, pp. 329—330) are clearly aware of the need to allow for the regression effect, which they see as a result of unreliability in the measuring instruments. They correct for this effect (op. cit., p. 222) by subtracting net change in the experimental groups from net change in the control groups to arrive at a net effect which ought to be the true effect. This procedure is also recommended by McNemar (1946).

Coming to the third main problem, namely change and its correlation with external variables, it obviously embraces both of the previous problems. The question of the reliability and validity of change is again present. And we again have to consider the observed versus "true" correlation between initial score and change.

It should become clear from the foregoing discourse that, in determining the correlation between change and an external variable, we ought somehow to partialize the initial score or keep it constant. As Lord, Bereiter (op. cit.) and others have pointed out, we can obtain zero correlations if we take the total population for computing our correlations, whereas the classification of initial scores in subgroups would yield positive correlations in each group. Lord (1963, p. 35) puts it this way: "Which r_{ge} does the researcher want? The r_{ge} for the total group, or the systematically different r_{ge} found in each homogeneous subgroup? In general, the more extraneous variables one can hold constant in a scientific study, the clearer the picture.

For this reason, it is not the total-group correlation r_{ge} but rather the partial correlation $r_{ge\ x}$ $(= r_{ye\ x})$ that is usually of greatest interest."

Lord continues: "A further complication arises at this point. It is really not $r_{ge\ x}$ that we want, but $r_{Ge\ x}$. Such a partial correlation involving true scores is obtained simply by correcting the zero-order correlations for attenuation before computing the partial."

In another context Lord (1958, p. 450) takes up an additional factor which complicates this situation: "Whenever we correlate gains with some third variable, we are treating *numerically* equal gains at different parts of the score scale as if they were really equal. The use of partial correlations in no way avoids this difficulty." This problem has long constituted a snag for testing theory as well as for applied research in the behavioral sciences.

Up to now we have been discussing change with reference to the technical aspects of instrumentation and measurement theory. An additional problem area we should like to touch on has to do with the relationship between change and the experimental design. To arrive at measures of change for our study, we have elected to carry out pretests and posttests on an experimental group. It was not possible to resort to a control-group procedure. Campbell & Stanley (1963, p. 177—182) are very critical against "the one-group pretest-posttest design (O X O)", as they call it.

Among the eight classes of extraneous variables which can lower internal validity unless controlled in an experimental design, they attribute definite weaknesses to the O X O design in regard to: *History*, the effect of external events between the two testing occasions; *maturation*, the processes of change occurring in subjects; *testing*, the effect of pretests on the responses given in posttests; *instrumentation*, changes in the structure or dimensionality of the measuring instruments which may arise even when the instruments are outwardly identical at pretest and posttest; and *statistical regression* (see previous discussion). This reasoning can obviously not be faulted on conceptual grounds, and it has also been generally accepted in standard works dealing with behavioral science methods. Although it is impossible to establish as a general rule the extent to which these biases affect the experimental results, it can be logically assumed that the effect will vary considerably from case to case and that it can be assessed to some degree in the individual experiment.

The problems of the O X O design as regards our own study will be further penetrated in Chapter 12.

BRIEF SUMMARY OF PART I

Part I consists of four chapters:
Chapter 1. The study's terms of reference.
Chapter 2. Relationship between training objectives and evaluation.
Chapter 3. Relationship between background factors and initial attitudes.
Chapter 4. Attitudes and attitude change.

In *Chapter 1* we defined various limitations and outlined the principal questions of methodology which were to be further discussed in Part I.

1. By top management education we refer to external, residential, general management training courses for top and next-to-the-top executives and specialists in companies and comparable organizations.

2. This study will not be concerned with the outcome of training, considered as changes in attitudes, that may be derived from teachers, specific items of instruction, or instruction methods; instead, we limit our purview to participants in the program and their response to the instruction as a whole.
3. Only training-related measures of change will be used to control training results.
4. In terms of methodology and theory, we shall be concentrating on three complexes of problems:
   — Relationships between training objectives and training evaluation.
   — Relationship between background factors and initial standing-change
   — Attitude change

In *Chapter 2* we discussed the relationships between training objectives and evaluation.

We pointed out that the training needs of participants cannot be entirely met by the objectives of this type of training. It is reasonable to expect participants of varying backgrounds to have different training needs. This virtually self-evident observation is bound to react on evaluation studies in that the researcher does not simply content himself with noting the presence or absence of change, as expressed in mean value differences between pretest and posttest. Change in relation to differences of participant backgrounds must also be studied.

In the same chapter we also underlined the importance of not only relating evaluation to training objectives, but also of clearly defining the group or groups of objectives which are to be selected for evaluation. In our study we decided to relate our evaluation to the training objectives that immediately precede and determine the content and execution of training.

In *Chapter 3* we discussed the relationships between background factors and initial attitudes. Here we sought to demonstrate that the background factors for participants must of necessity affect the results of training. At the same time we demonstrated how evaluation researchers in management training have neglected this relationshop to a very great extent. Only a few researchers in the field, such as Fleishman, Kile and Meiginez, have included participant backgrounds as a necessary component of the evaluation process. Our complete adherence to this view is illustrated by the three main hypotheses we formulated in this chapter:

I Initial attitudes and background variables covary.
II Initial attitudes and change covary.
III Change and background variables covary.

In *Chapter 4* we have discussed attitude change. After briefly touching on the question of how to define the concept of attitude, we proceeded in this chapter to discuss attitude change, methods of measuring change, and technical problems in the measurement of psychological change.

With regard to different theories of how communication shall be devised to produce the most change effect, we found that we could not definitely decide one way or the other for purposes of this study since we are actually not examining that part of the communication process.

In the matter of different techniques for measuring attitudes, we set forth the advantages and disadvantages of single questions and scales. In our case we elected to work with two types of instruments for the parallel determination of attitudes at pretest and posttest: Single questions and scales of the Semantic Differential type.

In conclusion we took up various technical problems in the measurement of psychological change. Attention was called to difficulties of the same kind encountered by other researchers: the low reliability of change measures; the frequently hidden artificial negative correlations between initial standing and change; and in relation thereto, the general weaknesses described by Campbell & Stanley in the one-group pretest-posttest design.

PART II

Chapter 5

INTRODUCTION OF THE EMPIRICAL INVESTIGATION

Part I was chiefly devoted to a review and discussion of various theoretical and methodological questions which we considered essential for evaluation studies of management training. In the process we imposed certain limitations on our terms of reference, partly made necessary by the research situation available to us for the collection of empirical data, and partly by our own focus of interest and assessment of what looked like the most promising avenues for obtaining more relevant information on management training evaluation.

We have now come to the stage where we should like to gather two sets of data for our subject group: the participants in the Yxtaholm Top Management Course:

— attitudes of participants before and after training to areas corresponding to training objectives;

— information on background of participants which might be related to initial attitudes and change.

We want these two sets of data for a broad, exploratory analysis—one that also lends itself to a measure of hypothesis-testing—of the relationships between

background — initial attitudes
initial attitudes — change
background — change

It might be inferred from the layout of our report, with Part I given over to theory and Part II to the empirical investigation, that the results of the latter were meant to confirm the accuracy of the theoretical analysis. That is not the case. Both parts of this study took shape gradually over a relatively long period devoted to preparatory work, pilot surveys, discussions with teachers and course participants, etc. The pilot surveys, concerned with the analyses of training objectives and of personal backgrounds having possible relation to initial attitudes and change (see Chapters 6 and 7), were especially influential in determining the substance of the corresponding theoretical discussions in Part I. It is impossible to specify the extent to which external conditions, the findings of earlier research, and our own pilot surveys have each contributed to the limitations of research scope and the concentration on specific problems.

In this chapter we shall briefly describe the outer framework of the empirical investigation, the form and content of the training to which it applies, and the composition of the subject groups. We shall also classify the different stages which entered into the investigation itself.

At the present time the Swedish Employers' Confederation (SAF) runs three six-week courses a year on top management at its residential school in Yxtaholm. The participants in these courses are top-ranking executives or equivalent staff members who are chiefly employed by firms in the private and cooperative sector, though government offices and trading agencies are also represented. The substance of training closely corresponds with that offered by executive development programs in Western Europe and the United States.

Stated objectives and contents of the Yxtaholm course[1]

Objective

"To provide further training in work as head and director of a company or of a significant part thereof, or as specialist at comparable levels".

---

[1] From Program of Courses, SAF, 1965.

Content

"The subject matter is meant to cover important problems arising in management. Program items and elements will be consistently presented, discussed and exemplified in terms of management's 'total aspect'. Among other things, this means that specific details of performance will be treated only in exceptional cases.

Program items and course topics constitute an integrated whole, considered as the function and subject area of management. For practical reasons, the subject matter is divided into course segments. However, these do not comprise detached and self-contained units of the course."

Course segments:

Corporate policy, organization, management

"Corporate objectives and the formulation of different parts of company policy, with particular reference to organization and personnel. Determination of spheres of work and authority; requirements for and measurement of management performance. Official channels and other communications in companies. Centralization and specialization versus decentralization. Striking a balance between organizational structure and personnel resources. Managerial personality and administrative technique. The control function of management."

Personnel function and external relations

"The adaptation between individual, group, job and job environment. Analysis of job requirements and of individual qualifications for the job. Group and individual characteristics of the labor force. Personnel budgeting, selection and hiring, training and promotion. Wages and salary administration, job evaluation, merit rating. Labor legislation and collective bargaining. Problems in wages policy and social policy. Status of the individual company in political society. Conduct of public relations by private enterprise and companies."

The economic setting of corporate enterprise

"Aims and means of national economic policy. Taxation, structural rationalization, problems of competition, labor market policy, integrated markets, the developing countries. Economic objectives and programs of the company. Cost and income analysis and availability of alternatives based on analysis findings. Appraisals of investments, choice of product mix and profitability analyses. Business forecasting and appraisals of competition. Sales promotion and sales organization. Purchasing policy and purchasing organization. Balancing the purchasing, manufacturing and selling functions of the company."

Integration segment

"This segment repeats the topics treated earlier in the course and considers them in a related context. The aim is to illustrate the balancing and coordination of the shifting views and opinions which influence top-level decisions in a company".

There is a gap of about three months between the two three-week periods of the course. While in residence, the course participants work five days a week from Monday through Friday.

The instruction given appears to be essentially similar in nature to that which characterizes management courses elsewhere. Teaching duties are performed by high-ranking professionals, by people actively engaged in the fundamental and applied sciences, and by leading members of the working community. Instruction methods make provision for lectures, seminars, group work, discussions of practical cases, individual studies of literature and, to some extent, management games.

Participants in the main investigation

The subjects we selected were 140 persons enrolled in the five courses which were held in the period from May 1964 to November 1965. Table 1 gives relevant figures for each of the courses.

Table 1. *Courses and participants in the main study.*

Course	Enrollment	Participants studied
I	35	28
II	29	21
III	35	25
IV	35	34
V	35	32
Totals	169	140

Most of the 29 participants excluded from our study are "dropouts": i. e., they attended the first three weeks of the course but were compelled to postpone attendance in the second part until a later date. The total enrollment of 169 includes a few persons who had already attended a part of the course before the investigation started and were thus enrolled only in the supplementary part. A couple of deaths occurred during the course of the investigation.

There was no reason, and indeed no possibility, to ascertain how representative our sample was in relation to the total enrollment. Neither do we propose to make any comparison between groups of participants in the different courses, even though this would be of interest in its own right.

From the educational point of view, of course, the influence to which participants are exposed may be influenced in turn by the composition of their group. But in order to decide just how far each course enrollment is representative of a population—let us call it "Participants in the Yxtaholm management course"—we should have to test representativeness with reference to all the background variables which enter into the investigation. We should then obtain certain significant differences between the component courses on a purely random basis. When we also note that the participants in each course are divided into discussion groups, and that the instruction given from course to course is reasonably bound to contain certain uncontrollable variations, the further progress of our work would scarcely be served by an exhaustive analysis designed to test the comparability of groups enrolled in the different courses.

In processing our empirical data we shall merge the participants into a single group and regard them as such. There is nothing—whether it be the ways used to announce the courses, the selection of people to attend them, the policy observed by the various companies and institutions in letting their employees attend these courses, etc.—to suggest that the five groups of participants differ from one another in any systematic respect.

SELECTED CHARACTERISTICS OF THE PARTICIPANTS

To help us in our description of the group, we shall make use of histograms and tables below to show the ages of participants, their educational background, and the areas they work in.

Fig. 3. *Age distribution of participants in the main study.*

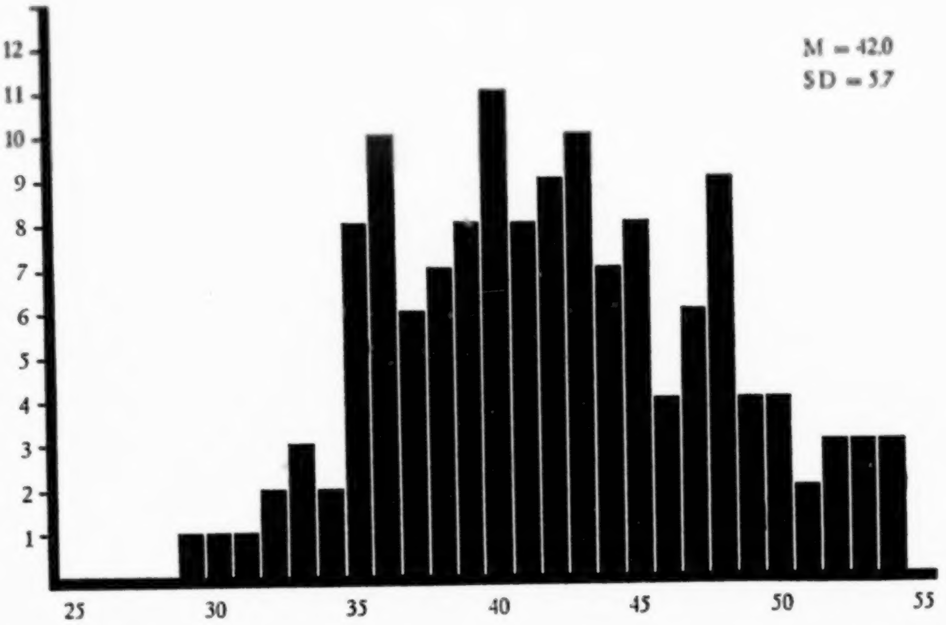


Table 2. *Educational background of participants in the main study.*

Advanced degree in engineering	1
First degree in engineering	56

Technical high school	7
Other subprofessional engineering qualification	14
Advanced degree in engineering	1
First degree in business administration	13
Commercial high school	5
Other business training	8
Other university degrees	18
Ordinary high school diplomas	8
Other educational attainment	19
Total	150

(Ten of the 140 participants held degrees in more than one field)

Table 3. *Areas of work of participants in the main study.*

	Production	R & D	Sales Purch.	Finance	Admin.	Pers. man.	Other	Total
National and local government, incl. trading agencies and State-owned enterprises	7	1		1	7	1	4	21
Private sector	25	10	13	16	40	4	1	109
Co-op sector			1	1	8			10
Total	32	11	14	18	55	5	5	140

The above classification of work areas is a rough breakdown, based on particulars supplied by the participants themselves (Questionnaire B 1: Personal Background Data).

Not only are the subjects heterogeneous in terms of the characteristics shown in the histogram and tables, but also as regards line of business and size of organization. Most of the participants work in jobs ranked above level 3 in the Swedish Occupational Classification (1965).

Main stages of the investigation

The empirical investigation has been divided into two stages:

1. Pilot surveys
2. Main investigation

The pilot surveys covered the following: First, an analysis of training objectives; this is described in Chapter 6. Second, a study intended to provide source data for the formulation of hypotheses on correlation of background factors with initial attitudes and change; this is described in Chapter 7. Certain measuring instruments were devised and tested in connection with the pilot surveys. Altogether, they embrace 130 participants enrolled in four earlier courses.

As mentioned earlier, the main investigation pertains to 140 participants enrolled in five later courses. After two of these courses were completed, the instruments incorporated in the investigation were subjected to final tests. These tests drew on data relating to 60 participants. We have taken the liberty of including the 60 as subjects in the main investigation for the following reasons. The findings of our tests did not give cause for changing the instruments or the testing situation. We have tested reliability, constructed certain total indexes, and so on. Had we excluded the 60, our research population would have been too small to permit studying of our hypotheses in quantitative terms. It was not possible to include the participants enrolled in later courses, since these courses have been given a substantially different content.

Chapter 6

TRAINING OBJECTIVES

Our discourse under this head will tie in with the theoretical discussion of the relationship between training objectives and evaluation given in Chapter 2. It was there observed that researchers generally admitted the necessity of making evaluation take account of the objectives that training has or should have. At the same time, however, we noted that very few consequences of this admission had been drawn as far as management education was concerned. We then presented, with reference made to a model, our theoretical view of the connection between training objectives and evaluation, adding that for our own project we had elected to consider evaluation in the light of the objectives which immediately precede training and determine its content and execution (see Fig. 1).

Interview study to identify training objectives

To arrive at these determinant objectives, we held a series of interviews as part of a pilot survey. There were 17 respondents in these interviews, consisting of program directors, teachers and others who had influenced the present contents of the course program.

As preparation for the interviews we were given the opportunity to follow the progress of a course in part and examine its syllabus, documentation in the form of lecture summaries, reports on group work and discussions of practical cases, etc. In addition we looked at the minutes of committee meetings and memoranda which showed how the course program had evolved. The interviews were then planned on the basis of this background information.

Every interview, which ran for one to three hours, was carried out in three stages. The first stage employed nondirective questions, which prompted each respondent to describe spontaneously his subjective experience of training objectives in terms of: global changes resulting from the course in its entirety, general changes within the main field of training (business organization, personnel administration, business economics), and special changes in segments of the main field. In the second stage of the interview, the respondent was asked whether the participants had different training needs corresponding to the objectives.

In the third and final stage, the interview was generally summed up with reference to topic headings in the course program. The questions asked were adapted to each respondent's particular experience of the course. Obviously, program directors and head teachers had a broader overall picture of training objectives than the specialist teachers, who only dealt with limited segments of subject matter over a short period of time. It hardly needs to be pointed out that this analysis of training objectives has nothing in common with the analysis of training needs which ought to precede every program of courses. In any event our analysis was meant to help us formulate an approximation of the objectives which underlie and determine present training content. The analysis does not take up the question of whether these objectives, and therewith the different elements of training, actually corresponds to the needs of participants.

Findings

Given the generally nondirective orientation of the interview study, it yielded a variated picture of course objectives. In our opinion, this confers a distinct advantage as compared with the more formalized type of interviews, which in a situation such as this tends to suppress the expression of finer shades of meaning. At the same time, however, the use of open-end questions in nondirective interviews makes it more difficult to quantify the findings for purposes of objective description. In a sense, what we have done with our type of interview is to shift our subjective element from the interview-planning stage to the interpretation of interview responses. This means that we have also aimed at a qualitative analysis of the findings. The findings or, perhaps more accurately, the conclusions we drew from the interview study have been given the shape of a number of training objectives.

The respondents were agreed that it was not the primary purpose of the course to teach the participants methods or techniques which they could apply in practice, but rather to impart outlooks, points of view, or *attitudes* within the field of management. Here we wish to emphasize that an important result which emerged from the interview study was to limit our focus to the attitude area; this of course affected our choice of measuring instruments for the determination of initial standing and change.

A second important conclusion which had bearing on the design of the main investigation, and which we felt could be drawn from the interview study, concerns what we should like to call the homogeneity-heterogeneity of the training objective. Reference is often made in the literature to the "total aspect of management" as an objective or result of training. Thus Andrews (1957) calls attention to statements by participants that the training "broadened their horizons". Bakke (1959) cites statements of the type: "Before he was an engineer, now he is a manager". In our interview study, very few if any of the responses could be taken to mean that the course proposed to achieve such global changes. Instead, a number of objectives were put forward which in their concrete form were heterogeneously composed and well demarcated from one another, especially between the subject matter areas of business organization, personnel administration and business economics.

The interview study enabled us to formulate a number of training objectives which immediately precede and determine course content and execution. Obviously, the study could not purport to give a complete specification of all objectives of this kind, nor was that our intention. What we can hope for, rather, is that the analysis has crystallized the most important objectives. These we sought to have expressed or ourselves express in such terms that they could provide a basis for the construction of measuring instruments in corresponding areas.

Training objectives can be made specific in accordance with several principles. The way this is done will naturally depend on how the objectives are to be utilized. If the objectives are meant to underpin a training plan which seeks to prepare one or more individuals for certain well-defined job duties, it will often be suitable to specify the objectives in terms of desired manifest behavior (compare the TWI system and later systems, especially in programmed teaching). In our case, where the purpose in specifying the training objectives is to identify the attitude areas within which we seek to measure initial attitudes and change, the objectives should be formulated so as to permit the construction of attitude-measuring instruments. Within these areas we then propose, in keeping with the aims of the investigation, to study the covariation of background variables with initial attitudes and change.

TRAINING OBJECTIVES FORMULATED ON BASIS OF THE INTERVIEW STUDY

The following training objectives (To) have been formulated in consequence of the interview study. They serve as the basis for the construction of instruments to measure initial attitudes and change in the main investigation:

A. *Business organization*

To 1 To increase understanding of the importance of having a company explain corporate aims to itself and to its employees.

To 2 To increase understanding of the importance of having a company coordinate its resources.

To 3 To increase understanding of the importance of the company's different functions.

To 4 To increase understanding of the importance of having a company clarify and apply its policies.

To 5 To increase understanding of the importance of performance controls.

B. *Personnel administration*

To 6 To increase understanding of the importance of personnel management questions.

To 7 To increase understanding of the importance of internal information and communication.

To 8 To increase understanding of the importance of personnel administrative techniques.

C. *Business economics*

To 9 To make participants more critical of source data used in profitability analyses.

To 10 To increase understanding of the importance of adapting liquidity to general company policy.

To 11 To increase understanding of the importance of adapting methods of costing to particular situations.

D. *Scientific method in management*

To 12 To increase understanding of the importance of scientific method in management work.

Chapter 7

BACKGROUND VARIABLES

In Chapter 3 we presented our frame of reference in respect of the relation between background factors on the one hand, and initial standing and change on the other. Citing a few examples from training and allied fields, we sought to demonstrate that background factors can logically be seen to covary with both initial standing and change. After a perusal of the literature, it also seemed to us that these viewpoints were given only meager consideration in the evaluation of management training. The relationship between background factors on the one hand, and initial standing and change on the other has been made the focus of interest for our own study.

When confronted with the selection of background hypotheses, we wanted to go beyond certain conventional background factors as well as those which have customarily been drawn upon in studies of training and allied fields, and in addition be able to set up hypotheses for background factors which were specifically related to our research situation. Ideas and suggestions for such hypotheses had emerged in the course of the interview survey of training objectives described in the previous chapter, where the respondents often linked the discussion of these with background factors of the participants.

Interview study to identify background hypotheses

In order to impart a firmer structure to these hypothetical relationships, we conducted another pilot survey, consisting of interviews with 60 persons who had been enrolled in two earlier courses. (All interviews were carried out by the author.) The interviews were based on pretests and posttests employing an 82-item questionnaire with paired questions. In its tentative form, this questionnaire was intended to measure the attitudes of participants before and after training. After the scores of each respondent on both tests were reviewed and tabulated, individual interviews were held within one week after the second test. Each interview ran for two to three hours. The procedure adopted in the interviews was to show the respondent his scores on both tests for each of the questions. He was then asked to indicate whether or not the two answers to each question expressed a real change in attitude and to state his reasons for the answers he gave on both tests.

The interview survey had a twofold aim: first, to determine whether the models portraying the interaction of background factors with initial standing and change, as set up in Chapters 3 and 4, would find empirical support for application within the scope of the projected investigation. Given a positive result on this count, we could proceed with the second aim: to formulate specific subhypotheses. At this stage of the project we thought it would be most profitable, as well as most defensible in terms of research methodology, to make a qualitative interpretation of the interview findings.

Within the areas of training corresponding to the training objectives, there is both change and an absence of change. The change in some areas moves in a direction which is common to the participants, whereas the direction of change in other areas will vary for different participants. Each participant has exhibited great variations for the different training areas both in respect of initial attitudes and propensity to change.

Some participants thought they had been influenced by one component of training in a certain direction, while others said they had likewise been influenced, though in quite the opposite direction.

The differences between participants on both initial attitudes and propensity to change accord with our conceptions as given in Chapters 3 and 4.

In regard to the second purpose of the interview, we asked the respondents to give reasons for their initial attitudes as well as for the subsequent change or absence of change.

The reasons advanced for initial attitudes were chiefly related to knowledge, experiences and conditions in the respondent's place of employment. Change or its absence was explained firstly as for initial standing, and secondly in relation to interests, needs, ability to assimilate the instruction, and the perception and interpretation of different parts of the training course.

Some of the stated connections between background factors and initial standing-change are much too trite and self-evident in their general form to warrant further discussion. Example: knowledge and experience underlie the formation of attitudes.

The interpretation we put on other stated relationships, however, needs further elaboration. Take, for example, the finding that some participants are changed while others retain their initial attitudes after training in a particular area; or the finding that change may move in diametrically opposite directions for different participants. In part, our interpretation of these can be given theoretical and logical explanations, and in part suggest ideas for further exploration in the main study.

Change as a result of training presupposes that there is communication—that a message is being perceived and interpreted. In a training situation a desired change in attitude may already be prevented because the participant isn't getting the message. Deranged communications on the recipient side might be explained in that case by such factors as needs, interests, motivation, ability and educational level.

There may be absence of change even when the participant perceives and interprets the message. This might be explained in commonplace terms by saying that full congruence exists between the influence the message is meant to exert and the participant's initial attitude. By the same token, this congruence may be absent and still no change will result. Resistance to change is a phenomenon as well-known as it is accepted, even though theories about its causes diverge.

The training program we have studied seeks to introduce lights and shades into its treatment of the subject matter. Portrayals in black and white are presumably rare. A recurring objective of the program is to give participants this nuance by explaining subject matter from different angles. This is not to say that the objective is necessarily achieved. Participants may respond to one or another part of the same message, with the result that they may be variously influenced in different directions. That this actually happens in numerous cases is confirmed by experiments and by research and practical experience in the field of communication.

Subhypotheses on relationships between background factors on one hand and initial attitudes and change on the other

Guided by the findings of our interview study and certain general assumptions on relevant background factors, we have formulated a number of background hypotheses. Even though every hypothesis cannot be assumed to be equally relevant for covariation both with initial attitudes and change, we have exploratively chosen to include both these components consistently, and therefore we have obtained a double set of hypotheses.

For some of the hypotheses it has lain ready to hand to give them a directive formulation, while others have not lent themselves to such formulation. In this situation we decided to abstain from directive hypotheses altogether.

Initial attitudes and change covary with

Hb 1 Age
Hb 2 Intellectual ability
Hb 3 Flexibility
Hb 4 Knowledge
Hb 5 Job experience
Hb 7 Present job duties
Hb 7 Reasons for attending course
Hb 8 Policies within the participant's organization and his "proximity" to these policies
Hb 9 Interests

(Hb stands for hypothesis, background)

Over and above the foregoing hypotheses, we originally planned to include a hypothesis formulated as follows: Initial attitudes and change covary with educational background. However, we decided to exlude it for two reasons: educational attainments of participants were too diverse in relation to group size; and the data from B 1 in this respect were partly incomplete.

Chapter 8

INSTRUMENTS FOR TESTING THE HYPOTHESES

The collected data may be divided into three groups according to their contents:

— Attitudes before and after training within those fields we have chosen for the study of initial attitudes and attitude change.

— General background factors for all attitude areas.

— Specific background factors for each attitude area.

To obtain these data we were able to make limited use of certain instruments which had already been devised and tested for other purposes. The remaining instruments are of our own design.

Instruments for measuring initial attitudes and change

As was described and explained in Chapter 4 (p. 56), our pretests and posttests of attitudes drew on two different methods of measurement: single questions (the Questionnaire) and semantic differential scales (the Semantic Differential scales).

THE QUESTIONNAIRE (PQ-VARIABLES)

This instrument was developed in collaboration with course directors and head teachers after completed analysis of training objectives (see Chapter 6). Tentative formulation was given to some 80 items, consisting of paired items in the form of assertions or statements. The statements in each item pair were worded as opposites. Subjects were asked to respond to each statement along a six-point scale ranging from "strongly agree" to "strongly disagree". The individual items were arranged in random order. Participants in two of the courses covered by our pilot study (N = 65) were invited to answer the questionnaire in its preliminary version at the end of the course. Correlations between each item pair were computed so that we could at least identify those pairs which showed strikingly low relationships. About one week after the tests two hearings were conducted, each involving seven of the participants. At these meeting the wording of the statements was discussed in terms of how the participants interpreted, understood and accepted them. The questionnaire was considerably revised as a result of these analyses. As part of the pilot study relating to the connection of background factors with initial attitudes and attitude change (see Chapter 7), a new version was tried out on participants in two courses (N = 65) before and after training This version consisted of about 50 items, whereof only a small number were paired. After individual hearings were held following the second test (see Chapter 4), the questionnaire was again revised, producing the final version for use in the main investigation. This version consists of 42 items or single questions which principally refer to training objectives (see p. 78) in the following fields: business organization, personnel administration, business economics, and scientific method and research applied to the management field. Specific items in the questionnaire are reported in connection with the testing of hypotheses. The work of constructing the instrument must be seen in relation to the fact that it was not our intention to construct tests in the usual sense. The purpose here was to fashion an instrument embracing a number of single questions which, by being worded as clearly as possible, the subjects could understand and accept in such a way that their attitudes in each area would be reflected in their responses (face validity and logical validity). Practical reasons made it necessary to limit ourselves to this crude and relatively unsystematic phase in the construction work.

THE SEMANTIC DIFFERENTIAL SCALES (PS-VARIABLES)

Unlike the Questionnaire, the Semantic Differential scales were not pretested but were fitted directly into the main investigation. This was because these scales did not become relevant for our research until a late stage of the pilot-study period. While planning the research, we felt there was no opportunity to cater for our desire to determine attitudes by means of scales, since it would have been unfeasible to construct specific attitude scales for each attitude area. In the meantime (1963) Haire, Ghiselli & Porter published an initial report on their international study of managerial attitudes measured on a semantic differential scale (final version 1966); their application of this and other scales included earlier courses in management at Yxtaholm, the site of our own project.

At the same time the author in collaboration with Gärdin and Mårdberg got the preliminary results of a Swedish study where we had examined the generalizability of a semantic differential scale (published in its final version by Jerkedal, Gärdin & Mårdberg, 1966). This study sought to test the usefulness of such a scale to measure attitudes toward training. The findings indicated that the scale satisfied criteria of general applicability. We then decided to construct concepts on the basis of our analysis of training objectives, here again in collaboration with the course directors and main teachers, and to submit these to participants together with a semantic differential scale consisting of nine subscales taken from the Swedish version worked out by Haire et al, and augmented by a subscale (valuable-worthless) which Jerkedal et al included as a stable, evaluative factor in their study. The resulting semantic differential scale is shown below.

unimportant :____:____:____:____:____:____:____: important
profound :____:____:____:____:____:____:____: superficial
active :____:____:____:____:____:____:____: passive
difficult :____:____:____:____:____:____:____: easy
good :____:____:____:____:____:____:____: bad
stable :____:____:____:____:____:____:____: changeable
interesting :____:____:____:____:____:____:____: uninteresting
weak :____:____:____:____:____:____:____: strong
valuable :____:____:____:____:____:____:____: worthless
narrow :____:____:____:____:____:____:____: wide

The scale set included 43 concepts, each of which was offered together with the above set of adjective pairs.

In instructing the participants we largely followed the suggestions given by Osgood et al (1957, pp. 82—84), adding some examples of our own.

The question which now had to be answered was whether the semantic differential scale could be applied to the 43 concepts generally. One possibility, of course, would have been to take data from our main investigation and factor-analyze results from the scale for each of the 43 concepts. However, it seemed to us unnecessary to have to test the scale's general usefulness by carrying out 43 analyses; besides, the task would have incurred an inordinate expense of time and money. On the other hand, the concepts could be spot-checked, provided we picked those which were demonstrably heterogeneous in relation to one another. In order to make a suitable selection we drew on the Questionnaire, which with its 42 items was intended as a parallel instrument to the Semantic Differential scales. When the results of pretests for two of the courses (N = 62) in the main investigation were in, we analyzed material from the Questionnaire (principal-component analysis). The analysis yielded eleven main components, from which we picked six items, each representing a factor. Not only were the resulting concepts separated according to the analysis, but they were also amenable to direct expression in counterpart concepts of the Semantic Differential scales. The concepts are:

1. PS 9 Administrative measures
2. PS 16 Performance measurement and control—department heads
3. PS 22 Induction of new hires
4. PS 27 High liquidity as a matter of principle
5. PS 35 Absorption costing for choice of product mix
6. PS 43 Scientific method—personnel administration

Taking corresponding data from the pretests (N = 62), we then carried out a principal-component analysis of the results for each of these concepts. Since our sole interest in this connection was in one dimension—the attitude dimension, or the evaluative factor that is usually obtained as a strong initial factor in this type of semantic differential analysis—no rotation was undertaken. The correlation matrices are presented below, after which we tabulate the initial factor for each of the six concepts.

Table 4. *Correlation matrices for subscales in the Semantic Differential scales (N = 62)*

PS 9 Administrative measures

	1									
2	—.69									
3	—.68	.61								
4	.06	—.12	—.14							
5	—.30	.34	.35	—.20						
6	.01	.09	.03	—.18	.28					
7	—.51	.51	.47	—.22	.26	—.02				
8	.44	—.32	—.31	.17	—.24	.05	—.34			
9	—.69	.52	.61	—.04	.33	.04	.63	—.26		
10	.35	—.10	—.42	.17	.06	.19	—.17	.59	—.24	
	1	2	3	4	5	6	7	8	9	10

PS 16 Performance measurement and control — department heads

2	—.69									
3	—.64	.76								
4	—.02	.03	.10							
5	—.72	.60	.68	—.04						
6	—.28	.37	.27	—.05	.24					
7	—.61	.48	.59	.01	.71	.33				
8	.42	—.46	—.56	.03	—.62	—.39	—.63			
9	—.74	.59	.74	.01	.75	.28	.73	—.47		
10	.24	—.22	—.32	.00	—.31	—.18	—.31	.44	—.30	
	1	2	3	4	5	6	7	8	9	10

PS 22 Induction of new hires

2	—.55									
3	—.47	.72								
4	—.02	.03	.19							
5	—.42	.28	.34	.02						
6	—.29	.48	.47	.08	.52					
7	—.53	.44	.45	.09	.54	.45				
8	.17	—.23	—.29	—.13	—.39	—.27	—.36			
9	—.61	.43	.48	.05	.54	.41	.62	—.29		
10	.29	—.12	—.20	.01	—.20	—.14	—5.2	.42	—.25	
	1	2	3	4	5	6	7	8	9	10

PS 27 High liquidity as a matter of principle

2	—.82									
3	—.76	.81								
4	—.28	.28	.33							
5	—.81	.85	.74	.40						
6	—.57	.66	.61	.43	.76					
7	—.79	.88	.77	.36	.85	.61				
8	.68	—.76	—.70	—.35	—.82	—.73	—.77			
9	—.86	.89	.76	.32	.85	.66	.87	—.75		
10	.24	—.21	—.27	.05	—.25	—.15	—.30	.20	—.27	
	1	2	3	4	5	6	7	8	9	10

PS 35 Absorption costing — choice of product mix

2	—.86									
3	—.82	.84								
4	.05	—.11	—.02							
5	—.78	.71	.75	—.03						
6	—.38	.41	.46	—.01	.40					
7	—.75	.71	.70	—.03	.78	.23				
8	.62	—.59	—.68	.21	—.73	—.38	—.68			
9	—.81	.78	.74	—.14	.83	.35	.77	—.66		
10	.37	—.38	—.37	.25	—.49	—.24	—.58	.60	—.45	
	1	2	3	4	5	6	7	8	9	10

PS 43 Scientific methodology — personnel administration

2	—.53									
3	—.47	.81								
4	.18	—.06	.00							
5	—.42	.34	.36	.16						
6	—.28	.22	.20	—.08	.26					
7	—.71	.38	.33	—.06	.38	.14				
8	.63	—.43	—.32	.09	—.28	—.28	—.53			
9	—.85	.43	.36	—.12	.40	.30	.73	—.68		
10	.06	—.26	—.31	—.11	—.03	.19	—.11	.01	—.06	
	1	2	3	4	5	6	7	8	9	10

Table 5. *First component for each of the six concepts chosen to test the structure of the Semantic Differential scales as shown by principal component analyses.*

	1	2	3	4	5	6
Unimportant — important	—.86	—.82	—.72	—.88	—.90	—.89
profound — superficial	.77	.79	.71	.93	.88	.73
active — passive	.82	.85	.74	.86	.88	.67
difficult — easy	—.24	.02	.13	.44	—.13	—.11
good — bad	.48	.87	.69	.94	.90	.57
stable — changeable	.05	.45	.66	.78	.49	.39
interesting — uninteresting	.72	.82	.81	.92	.87	.77
weak — strong	—.59	—.73	—.52	—.87	—.82	—.74
valuable — worthless	.79	.87	.78	.93	.90	.86
narrow — wide	—.46	—.44	—.46	—.30	—.60	—.17
% of total variance	40.0	51.2	42.5	66.1	60.0	41.8

Except for good-bad under concept 1, high values for the first component may be consistently noted in the following subscales: unimportant-important, profound-superficial, active-passive, good-bad, interesting-uninteresting, weak-strong, and valuable-worthless. This attitude factor is operationally defined by these subscales. In accordance with our discourse on page 88, we further interpret the agreement in respect of the six concepts as meaning that a semantic differential scale built up from these seven subscales can be assumed to be generally applicable for all 43 of the included concepts.

The ten subscales were offered in all the tests we administered. A score ranging from 7 to 49 points, expressing the direction of attitude to each concept, was derived by totalling the subscales:

unimportant — important
profound — superficial
active — passive
good — bad
interesting — uninteresting
weak — strong
valuable — worthless

Table 6. *Reliability of the Semantic Differential scales. $N = 62$*

		reliability	s_e	M
PS 9	Administrative measures	0.81	1.73	44.19
PS 16	Performance measurement and control — departement heads	0.92	1.96	39.40
PS 22	Induction of new hires	0.83	2.05	40.68
PS 27	High liquidity as a matter of principle	0.96	1.55	39.08
PS 35	Absorption costing for product choice	0.95	1.87	38.61
PS 43	Scientific method — personnel administration	0.87	1.92	38.53

Use was made of Cronbach's alpha, the standard error of measurement, s_e, and means were computed.

Stability of the scale in attitude change

As we discussed in Chapter 4, change as the result of training may be difficult to determine because the measuring instrument used does not measure the same thing in pretest and posttest. The structure or dimensionality of the instrument may have altered in the meantime. Should that happen, a measure of change naturally becomes more or less meaningless. Frequently, as is the case for single questions, it cannot even be ascertained whether such change has occurred or not. In order to find out if the same condition applied to the Semantic Differential scales, we carried out six principal-component analyses based on results of the posttests, using the same group of subjects and the same concepts as in the analysis described above for the pretests.

For purposes of comparing these two analyses, Table 7 lists the first components derived for both pretests and posttests, with values from the pretests given in parentheses.

Table 7. *First components derived from principal-component analysis for each of the six concepts, chosen to test the structure of the Semantic Differential scales, pretests and posttests (pretests shown in parentheses).*

unimportant — important*	—.84(—.86)	—.86(—.82)	—.77(—.72)	—.77(—.88)	—.87(—.90)	—.92(—.89)
profound — superficial*	.82(.77)	.71(.79)	.69(.71)	.90(.93)	.90(.88)	.88(.73)
active — passive*	.79(.82)	.84(.85)	.76(.74)	.84(.86)	.88(.88)	.73(.67)
difficult — easy	—.05(—.24)	—.21(.02)	.17(.13)	.40(.44)	—.36(—.13)	—.09(—.11)
good — bad*	.76(.48)	.71(. 87)	.59(.69)	.76(.94)	.90(.90)	.81(.57)
stable — changeable	—.44(.05)	.34(.45)	.28(.66)	.57(.78)	.67(.49)	.31(.39)
interesting — uninteresting*	.67(.72)	.79(.82)	.80(.81)	.87(.92)	.81(.87)	.88(.77)
weak — strong*	—.56(—.59)	—.80(—.73)	—.68(—.52)	—.86(—.87)	—.85(—.82)	—.80(—.74)
valuable worthless*	.88(.79)	.87(.87)	.78(.78)	.92(.93)	.91(.90)	.94(.86)
narrow — wide	—.34(—.46)	—.42(—.44)	—.62(—.46)	—.46(—.30)	—.44(—.60)	—.51(—.17)

Even a cursory inspection of the results from both measuring occasions suggests that we need not assume that the instrument's dimensionality has changed from pretest to posttest. The seven subscales, here marked with an asterisk, which were selcted from the pretests to provide the total index for the semantic differential scale, also show high initial-factor values for the six concepts after analyses of posttest results.

CORRELATIONS BETWEEN SINGLE QUESTIONS AND SEMANTIC DIFFERENTIAL SCALES

When discussing single questions and semantic differential scales back in Chapter 4, we gave reasons for preferring to use both methods of measurement in parallel. We also indicated our intention to test their respective correlations within the different attitude areas. On the basis of these calculations we would then decide how far to go in drawing on the results from both methods for the purposes of further analysis and hypothesis-testing. If it turned out that we obtained high relationships, we would confine ourselves to results from the Semantic Differential scales, chiefly because this type of scale would enable us to make reliability determinations.

Shown below are product moment correlations for the different groups of variables, together with conclusions defining the extent to which item groups from PQ are to be adopted for further analysis.

In the first groups below PS 2 does not have any immediate corresponding PQ variable but has been related to PQ 2.

Clarification of company objectives	PQ 1—PS 1	
Coordination of company resources	PS 2	
Cooperation between functional heads	PQ 2—PS 3	
	PQ 1—PS 1	.06
	PQ 2—PS 2	.07
	PQ 2—PS 3	.09

The results yield zero correlations between PQ and corresponding PS items. Both item groups are adopted for further use.

Production	PQ 3—PS 4	.25
Purchasing	PQ 4—PS 5	.18
Selling	PQ 5—PS 6	.31
Finance	PQ 6—PS 7	.00
Accounting	PQ 7—PS 8	.37
Administration	PQ 8—PS 9	.26
Personnel administration	PQ 9—PS 10	.25
Top management	PQ 10—PS 11	.31
	Σ PQ 3—10 Σ PS 4—11	.16

Since the correlations are consistently low, both item groups are carried over for further use.

Written statements of company policy, detailed	PQ 11—PS 12	.67
Written statements of company policy, general	PQ 12—PS 13	.49

Since the correlations are relatively high, we take only the PS items for further use.

Performance measurement — lower-level employees	PQ 13—PS 14	.51
Performance measurement — foremen	PQ 14—PS 15	.52
Performance measurement — department heads	PQ 15—PS 16	.54
Performance measurement — vice presidents	PQ 16—PS 17	.62
Performance measurement — presidents	PQ 17—PS 18	.67

Since the correlations are relatively equal and high, only the PS items are adopted for further use.

Personnel management	PQ 18—PS 19	.18
Information and communication	PQ 19—PS 20	.30
Recruitment and selection	PQ 20—PS 21	.28
Induction	PQ 21—PS 22	.40
Training	PQ 22—PS 23	.35

Because of the relatively low correlations, we carry over both item groups for further use.

Profitability analyses	PQ 23—PS 24	.34
Data — profitability analyses	PQ 24—PS 25	—.01

Since the correlations are low or approach zero, both item groups are adopted for further use.

High liquidity	PQ 25—PS 26	.55
High liquidity as a matter of principle	PQ 26—PS 27	.62
Liquidity adapted to company policy	PQ 27—PS 28	.28
High liquidity not intrinsically desirable	PQ 28—PS 29	.58
Low liquidity	PQ 29—PS 30	.59

Correlations between the above items are relatively high except for PQ 27—PS 28. Inasmuch as attitude to liquidity is measured with several items, we adopt only the PS items for further study.

Direct costing — choice of product mix	PQ 30—PS 31	.59
Direct costing — production process	PQ 31—PS 32	.67
Direct costing — control	PQ 32—PS 33	.61
Direct costing — pricing	PQ 33—PS 34	.71
Absorption costing — choice of product mix	PQ 34—PS 35	.74
Absorption costing — production process	PQ 35—PS 36	.61
Absorption costing — control	PQ 36—PS 37	.66
Absorption costing — pricing	PQ 37—PS 38	.72

Since all these correlations are relatively high, only the PS items will be taken for further study.

Scientific method — management	PQ 38—PS 39	.55
Scientific method — purchasing	PQ 39—PS 40	.41
Scientific method — production	PQ 40—PS 41	.47

Scientific method — sales	PQ 41—PS 42	.41
Scientific method — personnel administration	PQ 42—PS 43	.53

Since all these correlations are relatively high, only the PS items will be taken for further study.

Instruments for measuring general (bg) and specific (bs) background variables

The description of instruments for measuring background variables will apply in common to specific and general variables; since some instruments will be used to obtain both types of background variables.

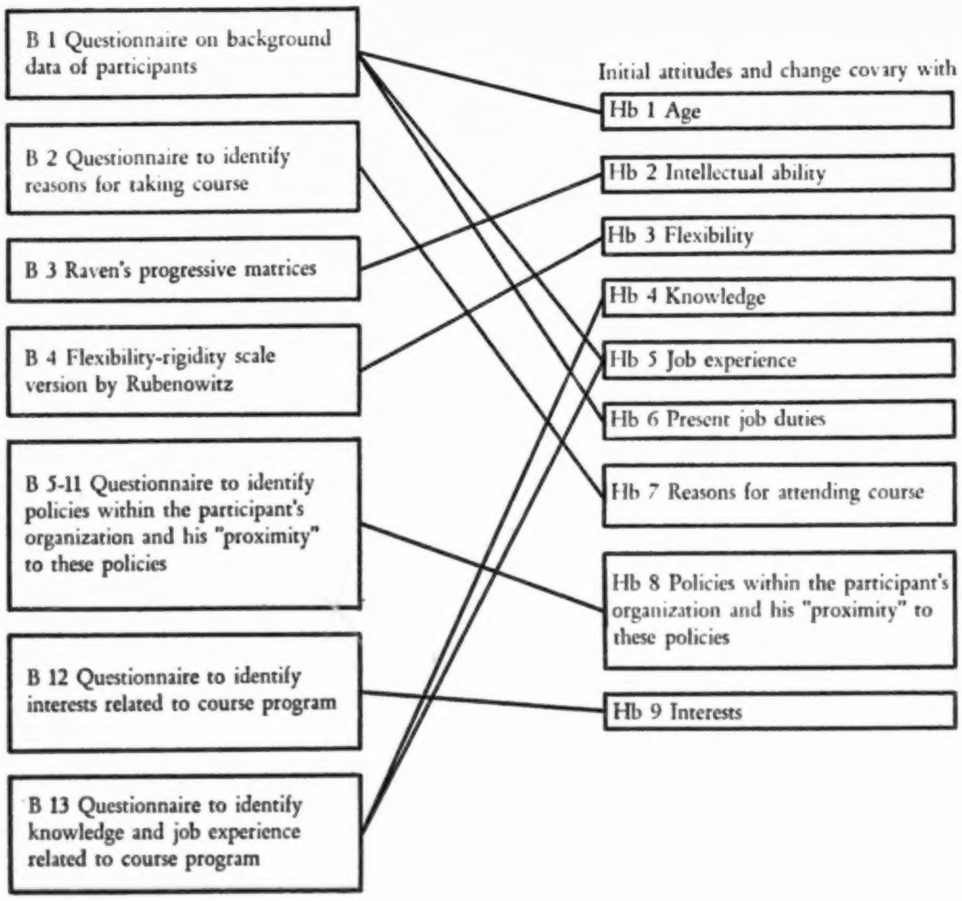
We will start by giving a description of the relationships between instruments and background hypotheses (fig. 4). After that the different instruments are presented and the work that has been done in order to obtain the different background measures.

B 1 QUESTIONNAIRE ON BACKGROUND DATA OF PARTICIPANTS

This questionnaire is conventionally worded and was sent by the program directors to participants about one month before the start of each course. Its primary purpose was to provide the directors with specific information about the background of participants.

The following particulars are included: name; age; present position/title of position; length of time in present position; present duties; number of persons employed by the company; number of salaried employees (exclusive of foremen); number of executive levels in the company; number of executive levels above respondent's level; number of executives at respondent's level; previous positions held (dates, companies, titles); education and training.

Fig. 4. *Instruments for measuring background variables.* (The lines show from which instruments data are drawn to test the different hypotheses).


B 1 Questionnaire on background data of participants
B 2 Questionnaire to identify reasons for taking course
B 3 Raven's progressive matrices
B 4 Flexibility-rigidity scale version by Rubenowitz
B 5-11 Questionnaire to identify policies within the participant's organization and his "proximity" to these policies
B 12 Questionnaire to identify interests related to course program
B 13 Questionnaire to identify knowledge and job experience related to course program
Initial attitudes and change covary with
Hb 1 Age
Hb 2 Intellectual ability
Hb 3 Flexibility
Hb 4 Knowledge
Hb 5 Job experience
Hb 6 Present job duties
Hb 7 Reasons for attending course
Hb 8 Policies within the participant's organization and his "proximity" to these policies
Hb 9 Interests

From this instrument we have obtained the following groups of data:
Age (Hb 1)
Job experience (Hb 5)
Present job duties (Hb 6)

Age

Age was calculated with reference to year and month of birth and to year and month when course started.

Job experience

The following data on job experience was obtained:

1. Experience of production
2. Experience of purchasing
3. Experience of selling
4. Experience of finance
5. Experience of accounting
6. Experience of administration
7. Experience of personnel administration
8. Experience of top management
9. Total breadth of job experience

In order to arrive at a measure of the experiences which participants had of the foregoing sectors, we had two experts in the field of top management selection make estimates of variables 1—8 on the basis of data from the B 1 questionnaire.

The ratings were carried out in accordance with the following plan:

a. A joint review of the data and discussion of some twenty questionnaires (which did not enter into the material for the main investigation).
b. Independent ratings of variables 1—8 along a four-point scale:
   1 = no experience
   2 = slight experience
   3 = rather considerable experience
   4 = very considerable experience
c. Computation of inter-rater reliability and comparison of the raters' frequency distributions along the scale.
d. A final integrated rating based on the previous separate ratings.

Taking into account that the questionnaires provided no more than bare statements of every participant's previous and current positions and job duties, the outcome of the reliability test must be considered satisfactory. The subsequent integration of ratings probably served to heighten the reliability.

Table 8. *Rater reliabilities of the different areas of experience*

bs J I 1	Experience of production	.83
bs J I 2	Experience of purchasing	.73
bs J I 3	Experience of selling	.83
bs J I 4	Experience of finance	.69
bs J I 5	Experience of accounting	.68
bs J I 6	Experience of administration	.47
bs J I 7	Experience of personnel administration	.58
bs J I 8	Experience of top management	.69

To arrive at a total measure for breadth of job experience, we elected to take an index from variables 1—8, whereby we assigned one point for a rating of 3 or 4 on the scale and zero points for a rating of 1 or 2. This aggregate variable is designated as variable 9.

For purposes of further use in our study the results from all variables 1—9 were dichotomized.

Present job duties

Ratings were again made under this head with questionnaire B 1 as the source. The intention was to arrive at measures of the extent to which the content of different course topics *ought* to be relevant for participants in the light of their present duties.

Participants were rated in this respect in terms of the following topics:

1. Analysis and clarification of company aims
2. Coordination of a company's resources
3. Organization of a company and clarification of written policies
4. Performance measurement — executives
5. Questions of personnel management
6. Internal information and communication
7. Personnel administration
8. Profitability analyses
9. Questions of liquidity
10. Methods of costing
11. Scientific method, research

For reasons of time, money and convenience, we decided to have only one of the two previously engaged experts perform the ratings. This procedure can be further justified in view of the largely satisfactory results achieved by the earlier ratings in terms of inter-rater reliabilities.

The ratings were made along a two-point scale, since the data did not permit a higher degree of discrimination.

B 2 QUESTIONNAIRE TO IDENTIFY REASONS FOR TAKING COURSE

It was to test hypothesis Hb 7 (initial attitudes and change covary with reasons for attending course) that we drafted questionnaire B 2. In following up on the reactions of participants who were enrolled in earlier courses, the program directors would customarily ask them this question: What reason or reasons explain your taking the course? Examination of the answers yielded a number of typical reasons which might be said to give them different dimensions: the company is systematically engaged in developing higher executives, the company management takes a generally favorable view of training, and so on. In order to systemize collection of data under this head, we divided B 2 into two sections: the first section consisted of two questions, the one concerned with identifying the initiative for course attendance, the other with specifying the nature of the decision taken in regard to attendance; the second section listed 11 typical reasons which had been cited by earlier participants. Under the second section participants were asked to mark on a four-point scale how each statement coincided with their own reasons:

— — this reason did not play any role in my case;
— this reason may have played some role in my case;
+ this reason played an important role in my case;
+ + this reason played the most important role in my case.

To determine whether the items in this crude instrument could be grouped within one or several dimensions, we carried out a principal-component analysis, taking data from the first two courses in the main investigation (N = 62). The item-by-item frequency distributions were skewed and we proceeded in the correlation matrix from dichotomized variables, which were obtained after median intersection. The correlation matrix is given in table 9. The unrotated principal component matrix is given in table 10. The unrotated matrix yielded four factors on the basis of Kaiser's criterion. The principal-component analysis disclosed that B 2 contains items which express reasons along different dimensions. In addition, it seemed reasonable to us to take the first three factors as a basis for constructing indexes for the component items.

Factor I Eigenvalue 2.61

1. A superior suggested I take the course. 0.78
3. It's company policy to send everybody at my level to the course. 0.69
5. The course forms a systematic part of the company's development plan for me. 0.62
11. My immediate superior went to the course and feels that his closest associates could also profit from it. 0.47
13. I myself believe I'll gain a great deal from the course. —0.52

The highest values for factor I relate to the following entries: "1. A superior suggested I take the course; 3. It's company policy to send everybody at my level to the course", and "5. The course forms a systematic part of the company's development plan for me". All these reasons involve an act of corporate planning. Operationally, we call this factor "corporate planning—course participation", and from an index consisting of the number of above-median markings for the component entries.

Factor II Eigenvalue 1.87

6. The decision for my taking the course was probably somewhat accidental. 0.70
8. Even if the course has nothing to offer me directly, it ought to provide some well-needed relaxation. 0.41
9. The decision for my taking the course did not have any precise objective in mind. 0.74
10. The company did not have anybody take the course before, so my participation is something of an experiment. 0.56

Factor II shows its highest values for entries 6, "The decision for my taking the course was somewhat accidental", and 9, "The decision for my taking the course did not have any precise objective in mind"—which both suggest the absence of planning. We give this factor the operational designation, "Laissez-faire—course participation," and form an index as for factor I.

Table 9. *Intercorrelations between items in B 2 (Reasons for attending course). N = 60*

	1	2	3	4	5	6	7	8	9	10	11	12
1. A superior suggested I take the course												
2. A superior made the decision for me to take the course	.29											
3. It's company policy to send everbody at my level to the course	.43	.13										
4. The course was considered valuable for my present job duties	—.20	.19	.10									
5. The course forms a systematic part of the company's development plan for me	.39	.31	.37	.02								
6. The decision for my taking the course was probably somewhat accidential	.16	—.03	.04	—.21	—.02							
7. The course is meant to prepare me for a promotion that's already lined up	.09	.18	—.12	—.15	.11	—.16						
8. Even if the course has nothing to offer me directly, it ought to provide some well-needed relaxation	.27	.07	.25	—.21	.09	.19	.06					
9. The decision for my taking the course did not have any precise objective in mind	.09	.09	.09	—.05	—.08	.32	—.19	.32				
10. The company did not have anybody take the course before, so my participation is something of an experiment	—.23	—.12	—.15	.02	—.14	.23	—.17	—.04	.32			
11. My immediate superior went to the course and feels that his closest associates also profit from it	.21	.04	.30	.07	.12	—.02	—.06	.09	.05	—.23		
12. The company management generally belives that training pays off	.18	—.16	.37	.11	.09	.16	—.14	—.12	.04	—.14	.30	
13. I myself believe I'll gain a great deal from the course	—.32	—.11	—.16	.33	—.29	.00	.00	—.12	.03	.20	—.13	—.08

Table 10. *B 2. Principal components*

	1	2	3	4	5	6	7	8	9	10	11	12
1	*0.78*	0.06	0.17	0.03	—0.06	0.15	0.00	—0.15	0.02	—0.45	—0.05	0.33
2	0.37	—0.20	0.22	*0.69*	—0.10	0.00	0.39	—0.15	0.07	—0.02	0.14	0.18
3	*0.69*	0.09	—0.35	0.10	0.03	—0.02	0.41	0.03	0.08	—0.14	0.21	—0.33
4	—0.15	—0.24	*—0.61*	0.59	0.04	—0.03	0.03	—0.10	0.05	0.20	0.12	0.29
5	*0.62*	—0.22	0.07	0.24	—0.41	0.03	0.24	0.20	—0.26	0.24	—0.34	0.00
6	0.13	*0.70*	0.06	—0.08	—0.19	0.42	—0.18	—0.30	—0.27	0.21	0.11	—0.05
7	0.07	—0.43	*0.50*	0.06	0.27	0.56	—0.02	0.34	0.13	0.10	0.11	0.01
8	0.39	*0.41*	0.36	0.10	0.52	—0.16	0.33	—0.09	—0.03	0.25	0.11	0.14
9	0.10	*0.74*	0.03	0.30	0.16	—0.11	—0.21	0.19	0.33	0.01	—0.32	—0.05
10	—0.40	*0.56*	0.02	0.26	—0.32	0.02	0.11	0.47	—0.11	—0.15	0.26	0.11
11	*0.47*	—0.04	—0.41	—0.13	0.41	—0.12	—0.39	0.30	—0.40	—0.04	0.03	0.00
12	0.37	0.11	*—0.64*	—0.32	—0.08	0.36	—0.05	0.07	0.32	0.14	0.00	0.06
13	*—0.52*	0.06	—0.28	0.36	0.34	0.41	0.22	—0.12	—0.20	—0.21	—0.24	—0.10
Eigen values	2.61	1.87	1.63	1.33	0.98	0.86	0.78	0.68	0.59	0.52	0.46	0.39

Factor III Eigenvalue 1.63

4. The course was considered valuable for my present job duties.	—0.61
7. The course is meant to prepare me for a promotion that's already lined up.	0.50

12. The company management generally believes that training pays off. —0.64

Factor III shows positive values for entry 7, "The course is meant to prepare me for a promotion that's already lined up", and negative values for entry 4, "The course was considered valuable for my present duties", and entry 12, "The company management generally believes that training pays off". Operationally, we call this factor "Planned promotion—course participation", and form an index as for factor I.

Instrument B 2 has thus provided us with three background variables relating to reasons for taking training. They are scarcely self-contained and must be regarded as very crude and incomplete measures. None the less, we thought it warranted at the present exploratory level to keep them for purposes of subsequent analyses, since in combination with the other measures (which are also somewhat defective), they can contribute information for testing our main hypotheses dealing with relationships between background factors and initial attitudes-change.

B 3 RAVEN'S PROGRESSIVE MATRICES

Intellectual ability is a construct which can scarcely be covered by any one measure derived from an intelligence test. In formulating Hb 2, however, we assumed that participants in a course encounter a situation considerably unlike that of their daily lives, and hence ability to adapt to the unaccustomed ought to come into play. Certain areas of subject matter may be quite unfamiliar to the participants, or the theoretical turn taken by discussions may require a fairly high degree of abstract reasoning. To arrive at a measure which could purport to capture these factors under a criterion of intellectual ability, we elected to make use of Raven's progressive matrices. This test is probably too well-known to require further presentation.

According to Anastasi (1958, p. 246) the easier items of the test relate chiefly to visual perception, while the more difficult items "involve analogies and other logical relationships". The test is also held to be relatively culture-free (op. cit., p. 561) and negatively correlated with age (p. 245). In applying the test to our data, we have studied its correlations with age and with B 4 (the flexibility-rigidity scale in Rubenowitz's version). See Table 11.

Table 11. *Correlations between intelligence test score (Raven's progressive matrices, B 3) and some other background variables.* N = 140

B 1 Age	—.16
B 4 Flexibility	.20

Correlations $\geqslant .17$ are significantly $\neq 0$ at the 5 per cent level.

Our correlation between Raven and the age variable shows a weak negative tendency. The weakness may perhaps be explained by restriction of range. On the basis of his factor-analytic studies, Rubenowitz (1963, p. 22) concludes "... that the hypothesis stating that people on a low intellectual level are more rigid than people on a high intellectual level has *not* been supported by the findings in the present study". But in computing correlations between intelligence tests and some rigidity-flexibility tests of the kind we used, Rubenowitz obtained coefficients of the same magnitude as our own. Out of nine tested categories, seven yield significant (at the 5% level) negative correlations between different group intelligence tests and R 10 F (Rubenowitz's version of the F scale, op. cit., p. 146).

In our material the split-half reliability for B 3 is .88.

B 4 FLEXIBILITY-RIGIDITY SCALE VERSION BY RUBENOWITZ

Hypothesis Hb 3 has been formulated: Initial attitudes and change covary with flexibility. Rubenowitz (1963, p. 232) indicates a number of ways in which rigidity can manifest itself, among them resistance to change, pedantic habit stereotypy, authoritarianism and concern for prestige, intolerance and prejudice, and concreteness and anti-intraception.

When employing an instrument to measure rigidity-flexibility for purposes of our study, it lies ready to hand to assume, in the light of earlier research, that the underlying hypothesis would be aimed so as to show greater amenability to attitude change on the part of more flexible participants. However, the connection between flexibility and attitude change may be more complicated. Thus the manifestations which Rubenowitz enumerates might produce different results in the training situation. "Resistance to change" and "pedantic habit stereotypy", for example, would not be expected to work in the same direction as "authoritarianism and concern for prestige". In formulating our hypothesis, we have assumed the rigidity-flexibility variable to operate in a situation where the ego involvement of participants, their initial attitudes, and the instruction situation can influence the covariation of rigidity-flexibility and attitude change in different directions.

The B 4 instrument, which was especially prepared by Rubenowitz for this study, consists of 32 items from the following instruments:

R 10 R—F K	Swedish version of the Gough-Sanford Rigidity Scale	8 items
R 10 D	Swedish version of the Rokeach Dogmatism Scale	8 „
R 10 F	Swedish version of the California F Scale	8 „
L P	Himmelstrand's Political L Scale	8 „

Split-half reliabilities for each of these instruments were as follows: R 10 R—F K .78, R 10 D .59, R 10 F .64, and L P .89. This procedure enables us to take the resulting eight subtotals and estimate an internal consistency measure in accordance with Cronbach's alpha for the total. This value came to .84.

B 5—B 11 QUESTIONNAIRE TO IDENTIFY POLICIES WITHIN THE PARTICIPANT'S ORGANIZATION AND HIS "PROXIMITY" TO THESE POLICIES

The hypothesis Hb 8 that this instrument is related to is formulated as a direct result of the interview survey on background factors. When giving reasons for both initial standing and change, or the absence of change, respondents often referred to conditions in their own organizations and their own involvement in these conditions. Example: "This was my point of view on the question when I came to the course, and that is because we've applied it in our company with good results. I haven't changed in spite of all efforts by the teachers."

Hb 8 is of special interest because it reflects the spontaneous remarks of respondents, at the same time that it can be directly related to various theories, such as Bakke's fusion process (1953) and Sherif's social judgment-involvement approach to the study of attitudes and attitude change (1965).

Bakke writes (1959, p. 60): "The need for the Fusion Process arises from several facts. Internally an organization is faced with the simultaneous attempt at self-realization and maintenance of the organization, groups of its participants, and individual participants . . . these attempts at self-realization lead to any unit of behavior being a response to expectancies generated by all of these sources. . . . The Fusion Process attempts first of all to reconcile or *fuse* these expectancies and bring them into closer harmony with each other, and in the process the organization, the groups and the individuals are changed, and their behavior is changed."

Sherif (1965, p. xiii), in commenting on questions as to why change does or does not occur as a result of influence, writes: "The social judgment-involvement approach starts to deal with these questions through a theory of ego formation and functioning. The psychological tendency is toward stability of the person's ties and anchors in his social and physical surroundings, for these ties are intrinsic to the formation of a self identity."

Sherif then describes different situations to explain the connection between social judgement-involvement and communication with consequences for propensity to change. We cite two consequences where unlike consequences emerge. "If the topic at hand has little bearing on those attitudes that define his personal relatedness, he judges the discrepancy as smaller than it is. He can change his stated opinions on the topic with little discomfiture, since they were not very stable in the first place. He may very well change toward the advocated position more and more, the more discrepant it becomes.

But, to the extent that his attitude is constituent to his ego constellation, the tendency toward stability of its pattern is disrupted by exposure to discrepant communication. To the extent that he is ego-involved in its topic, to that extent his stand is salient in his judgment of how discrepant a communication is . . . Far from changing his own stand, he is more likely to retrench and may, when possible, shift his stand even further away from the message designed to persuade him to the contrary."

Considering the implications of these passages for our own hypothesis, the fusion process may be considered as having two broad concequences for the participants: first, they will have committed themselves to different attitude systems depending on the policies of their organizations —policies which more or less diverge from the training objectives; and second, that the fusion process has operated to varying lengths from one participant to another. This could then be reflected in covariation between "proximity" to organizational policies and their formulation on the one hand, and the initial attitudes of participants in corresponding areas on the other. The propensity to change, reverting here to Sherif's theory, would then depend on personal involvement in the communicated topic and on the extent to which the communication is discrepant from the participant's standing on the topic.

In the light of the foregoing discourse, instrument B 5—B 11 has been devised to test hypothesis Hb 8.

The instrument is divided into two groups of entries. The first group contains three entries:

1. Our company's policy in organizational matters.
2. Our company's policy in personnel matters.
3. Our company's policy in economic matters.

These three are meant to match the three main areas of training: business organization, personnel administration, and business economics.

Under each of the entries the subject were asked to state the degree of influence they exerted on, their familiarity with, and their personal opinion of existing policies in these matters.

Entries in the second group are concerned with more specific areas in relation to the training objectives:

Business organization: 4. Written policies
5. Performance control
Personnel administration: 6. Recruitment and selection
7. Internal information and communication
Business economics: 8. Liquidity
9. Costing methods

For each of these entries the subjects were asked to indicate their position on four questions relating to policies on the above matters in their own organization:

— a description of conditions in the organization;
— degree of personal influence;

— degree of knowledge;
— personal opinion.

Statistically, this instrument differs from the others in that we are here interested in grouping the subjects by their profiles on each question, proceeding first, where applicable, from conditions within the organization, and second, from statements of position on the three recurring variables: knowledge, influence and personal opinion. The initial breakdown of responses gave us such a wide dispersion that an overly refined classification would yield groups too small in size to enable us to relate them statistically with initial attitudes and change. It was therefore necessary to compress the responses and thereby reduce the number of groups. We started by computing intercorrelations for the nine subentries in the first three entries (see Table 12). Similar calculations could obviously not be made for the other entries, since these were based on varying conditions within the organizations from which the subjects came.

Table 12. *Correlations between selected variables in B 5—B 11. N = 140*

			1	2	3	4	5	6	7	8	9
Business organization	**influence**	**1**	—	.41	.12	.71	.33	—.03	.64	.40	—.08
	knowledge	**2**		—	.10	.40	.64	.16	.24	.30	.02
	pers. opinion	**3**			—	.00	.03	.49	.01	—.05	.35
Personnel administration	**influence**	**4**				—	.50	.13	.33	.34	—.07
	knowledge	**5**					—	.19	.23	.53	.03
	pers. opinion	**6**						—	—.06	—.06	.22
Business economics	**influence**	**7**							—	.63	—.04
	knowledge	**8**								—	.01
	pers. opinion	**9**									—

Correlations $\geqslant .17$ are significantly $\neq 0$ at the 5 per cent level.

The correlation matrix discloses relatively strong positive correlations between influence and knowledge in each area. For purposes of further grouping we therefore disregarded the "knowledge" variable. Further, the same positive correlations have been found within the influence, knowledge and personal-opinion variables. We thereupon constructed an index for influence and personal opinion calculated on the first three entries. The two derived variables are operationally defined as "general influence" and "general personal opinion". These variables were then included in the remaining set of background variables, while the other material from B 5—B 11 is incorporated in a separate analysis based on the groupings for each entry. The final grouping is tabulated below. Every subentry has been dichotomized.

Entry 1. Our company's policy in organizational matters (B 5 a).

Groups	Influence	Personal opinion	N
1	+	+	47
2	+	—	31
3	—	+	36
4	—	—	26
			140

Entry 2. Our company's policy in personnel matters (B 5 b).

Groups	Influence	Personal opinion	N
1	+	+	58
2	+	—	18
3	—	+	36
4	—	—	28
			140

Entry 3. Our company's policy in economic matters (B 5 c).

Groups	Influence	Personal opinion	N
1	+	+	53
2	+	—	12
3	—	+	51
4	—	—	24
			140

It also proved necessary to dispense with information on knowledge, influence and personal opinion when grouping the responses under entries 4—9, since the minimum number of groups was bound to be greater considering that we already made an initial grouping with reference to organizational conditions. We could take only one of the three subentries into account for grouping purposes. The one chosen was personal opinion (PO), since we assumed it would best express a participant's emotional stand towards conditions in his own organization.

Entry 4. Written policies (B 6).

Groups	Condition	Personal opinion	N
1	Specifically worded for the most part	+	26
2	Specifically worded for the most part	—	11
3	Generally worded for the most part	+	30
4	Generally worded for the most part	—	35
5	Written policies lacking for the most part	+	6
6	Written policies lacking for the most part	—	32
			140

Entry 5. Performance control (B 7).

Groups	Condition	Personal opinion	N
1	Systematically carried out	+	30
2	Systematically carried out	—	14
3	Not systematically carried out	+	18
4	Not systematically carried out	—	78
			140

Entry 6. Recruiment and selection (B 8).

Groups	Condition	Personal opinion	N
1	Systematically carried out	+	60
2	Systematically carried out	—	21
3	Not systematically carried out	+	16
4	Not systematically carried out	—	43
			140

Entry 7. Internal information and communication (B 9).

Groups	Condition	Personal opinion	N
1	Systematic both in form and content	+	51
2	Systematic both in form and content	—	21
3	Unsystematic in one or both	+	11
4	Unsystematic in one or both	—	57
			140

Entry 8. Liquidity (B 10).

Groups	Condition	Personal opinion	N
1	Liquidity adapted to company	+	16
2	Liquidity adapted to company	—	49
3	High liquidity	+	20
4	High liquidity	—	22
5	Liquidity—not applicable	+, —, no ans.	33
			140

Entry 9. Costing methods (B 11).

Four groupings are made under this head, having regard to the applications of costing methods: Control, Pricing (Price), Choice of product mix (Prod), Choice of production process (Process).

Groups	Condition	PO	Control	Price	Prod	Process
1	Absorption costing	+	32	29	25	26
2	Absorption costing	—	27	23	15	18
3	Direct costing	+	26	22	25	20
4	Direct costing	—	8	15	12	9
5	Absorpt. + direct costing*	+	7	6	5	2
6	Absorpt. + direct costing*	—	5	7	4	3
7	Costing methods—not applicable		35	38	54	62
			140	140	140	140

B 12 QUESTIONNAIRE TO IDENTIFY INTERESTS

The formulation of hypothesis Hb 9 (initial attitudes and change covary with interests) was based in part on the interview survey, and in part on a common-sense assumption of relationship between personal interests and attitude formation/change.

To test the hypothesis we worked out a questionnaire consisting of 23 single questions, where the subjects were asked to indicate degree of interest in a number of topics within the main areas of business organization, personnel administration, business economics and research-scientific method along a four-point scale. A specification of the entries is given in Chapter 9.

B 13 QUESTIONNAIRE TO IDENTIFY KNOWLEDGE AND JOB EXPERIENCE

The hypotheses Hb 4 (initial attitudes and change covary with knowledge) and Hb 5 (initial attitudes and change covary with job experience) were both formulated with reference to the interview survey findings, even though they may be regarded as generally well-established variables for determining connection with attitudes and attitude change.

The measures of knowledge and job experience we sought in a number of areas relating to training objectives should preferably have been objective, but it was not possible to construct instruments or devise situations for this purpose. Instead, we have had to make do with subjective appraisals by participants of their knowledge and experience.

Questionnaire B 13 was accordingly prepared to obtain these appraisals and to test our hypotheses. B 13 consists of 29 single questions pertaining to various areas which relate to training objectives. Respondents were asked to indicate on a four-point scale the extent of their a) knowledge of the area and b) experience in the area. The questions are specified in Chapter 9.

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* Owing to the small size of this group it has not been included for further study.

Brief summary of part II

Part II consists of four chapters:

Chapter 5. Introduction of the empirical investigation
Chapter 6. Training objectives
Chapter 7. Background variables
Chapter 8. Instruments for testing the hypotheses

The empirical investigation was introduced in *Chapter 5,* where we took up the following matters:

- That we should gather two sets of data: attitudes of participants before and after training to areas corresponding to training objectives.
- Information on background of participants which might be related to initial attitudes and change.
- That the main investigation concerns 140 persons who attended five top management training courses at Yxtaholm (the residential school of the Swedish Employers Confederation).
- That the participants in these courses are top-ranking executives or equivalent staff members who are chiefly employed by firms in the private and cooperative section, though government offices and training agencies are also represented.
- That the content is ment to cover important problems arising in management.

Course segments:

1. Corporate policy, organization, management
2. Personnel function and external relations
3. The economic setting of corporate enterprise
4. Integration segment

- That the main stages of the investigation are
  1. Pilot surveys
  2. Main investigation

The pilot surveys covered the following: first, an analysis of training objectives; and second, the procurement of source data for the formulation of hypotheses on relationships between initial attitudes and change on the one hand, and background on the other. Certain measuring instruments were devised and tested in connection with the pilot surveys.

In *Chapter 6* we discussed the interview study to identify training objectives. The following objectives were set forth as a result of this pilot survey.

A. Business organization

To 1. To increase understanding of the importance of having a company explain corporate aims to itself and to its employees.
To 2. To increase understanding of the importance of having a company coordinate its resources.
To 3. To increase understanding of the importance of the company's different functions.
To 4. To increase understanding of the importance of having a company clarify and apply its policies.
To 5. To increase understanding of the importance of performance controls.

B. Personnel administration

To 6. To increase understanding of the importance of personnel management questions.
To 7. To increase understanding of the importance of internal information and communication.
To 8. To increase understanding of the importance of personnel administrative techniques.

C. Business economics

To 9. To make participants more critical of source data used in profitability analyses.
To 10. To increase understanding of the importance of adapting liquidity to general company policy.
To 11. To increase understanding of the importance of adapting methods of costing to particular situations.

D. Scientific method in management

To 12. To increase understanding of the importance of scientific method in management work.

In *Chapter 7* we discussed background variables. Guided by the findings of our interview study and certain general assumptions on relevant background factors we could formulate the following background hypotheses:

Initial attitudes and change covary with

Hb 1 Age
Hb 2 Intellectual ability
Hb 3 Flexibility
Hb 4 Knowledge
Hb 5 Job experience
Hb 6 Present job duties
Hb 7 Reasons for attending course
Hb 8 Policies within the participant's organization and his "proximity" to these policies
Hb 9 Interests

In *Chapter 8* we gave an overview of the instruments for testing the hypotheses, construction work, motives for choice of items, reliabilities and so forth.

Instruments for measuring initial attitudes and change corresponding to the training objectives are:

1. The Questionnaire (PQ variables)
2. The Semantic Differential scales (PS variables)

The instruments for measuring background variables corresponding to the background hypotheses are:

B 1 Questionnaire on background data of participants.
B 2 Questionnaire to identify reasons for taking course.

B 3 Raven's progressive matrices.
B 4 Flexibility-rigidity Scale, version by Rubenowitz.
B 5—B 11 Questionnaire to identify policies within the participant's organization and his "proximity" to these policies.
B 12 Questionnaire to identify interests related to course program.
B 13 Questionnaire to identify knowledge and job experience related to course program.

PART III

Chapter 9

VARIABLES FOR DETERMINING BACKGROUND AND ATTITUDE DATA

We have set up three main hypotheses for our study:

I INITIAL ATTITUDES AND BACKGROUND VARIABLES COVARY
II INITIAL ATTITUDES AND CHANGE COVARY
III CHANGE AND BACKGROUND VARIABLES COVARY

Earlier, when we discussed and justified our selection of hypotheses, we also underlined the explorative character of this study even though it was cast in a hypotheses-testing mold. In now proceeding to account for our findings in Part III, we shall start off by presenting our measuring variables. These variables have in one way already been presented in Chapter 8 where we discussed the measuring instruments but now they will be given together with training objectives and hypotheses. Under each training objective we shall indicate the corresponding variables for the determination of initial attitudes and change. Under each subhypothesis on background we shall indicate the corresponding variables for the determination of general and specific background factors.

Every training objective will be set forth in conjunction with variables derived from the following measuring instruments:

The Semantic Differential scales (PS variables)

The Questionnaire (PQ variables)

As we described and explained in Chapter 8, PQ variables have largely been included for further analysis only insofar as they have shown low-order correlations with the corresponding PS variables.

Training objectives and corresponding attitude variables

T 1. Business organization

To 1 To increase understanding of the importance of having a company explain corporate aims to itself and to its employees.

- PS 1 Explaining corporate objectives to higher executives.
- PQ 1 All too often, unfortunately, management has not made clear corporate objectives to itself and to higher executives.

To 2 To increase understanding of the importance of having a company coordinate its resources.

- PS 2 Coordinating the company's resources.
- PS 3 Getting functional heads to cooperate.
- PQ 2 Functional heads often find it difficult to subordinate their functional interests to the company's overall objectives.

To 3 To increase understanding of the importance of the company's different functions.

- PS 4—11 Production, purchasing, selling, finance, accounting, administration, personnel administration, top management.
- PQ 3 Production is often accorded too much importance in relation to other activities of the company.
- PQ 4—10 Similar over-emphasis on the other measures as listed for PS 5—11.

To 4 To increase understanding of the importance of having a company clarify and apply its policies.

- PS 12 Written guidelines in detail of company policy for executives.
- PS 13 Written guidelines in general of company policy for executives.

To 5 To increase understanding of the importance of performance controls.

- PS 14 Performance measurement and control — lower-level employees
- PS 15 Performance measurement and control — foremen

  - PS 16 Performance measurement and control — department heads
  - PS 17 Performance measurement and control — vice presidents
  - PS 18 Performance measurement and control — presidents

T 2. Personnel administration

- To 6 To increase understanding of the importance of personnel management questions.
  - PS 19 Managing personnel.
  - PQ 18 Executives should take greater interest in their direct personnel management duties.
- To 7 To increase understanding of the importance of internal communication and information.
  - PS 20 Internal information and communication.
  - PQ 19 Companies should take greater interest in internal information and communication.
- To 8 To increase understanding of the importance of personnel administrative techniques.
  - PS 21 Recruitment and selection.
  - PQ 20 Companies should take greater intrest in recruitment and selection.
  - PS 22 Induction of new hires.
  - PQ 21 Companies should take greater interest in the induction of new hires.
  - PS 23 Training of personnel.
  - PQ 22 Companies should take greater intrest in the training of personnel.

T 3. Business economics

- To 9 To make participants more critical of source data used in profitability analyses.
  - PS 24 Profitability analyses.
  - PS 25 Data included in profitability analyses.
  - PQ 23 Companies should systemize their profitability analyses to a greater extent than they are now doing.

PQ 24 The data included in profitability analyses are usually defective.

To 10 To increase understanding of the importance of adapting liquidity to general organizational policy.
- PS 26 Very high liquidity in every situation.
- PS 27 High liquidity as a matter of principle.
- PS 28 Liquidity adapted to company policy.
- PS 29 High liquidity not intrinsically desirable.
- PS 30 Consistent maintenance of low liquidity.

To 11 To increase understanding of the importance of adapting methods of costing to particular situations.
- PS 31 Direct costing — choice of product mix
- PS 32 Direct costing — choice of production process
- PS 33 Direct costing — control
- PS 34 Direct costing — pricing
- PS 35 Absorption costing — choice of product mix
- PS 36 Absorption costing — choice of production process
- PS 37 Absorption costing — control
- PS 38 Absorption costing — pricing

T 4. Scientific method in management

To 12 To increase understanding of the importance of scientific method in management work.
- PS 39 Scientific method — management
- PS 40 Scientific method — purchasing
- PS 41 Scientific method — production
- PS 42 Scientific method — sales
- PS 43 Scientific method — personnel administration

Subhypotheses on background and corresponding measuring variables

Every background hypothesis is presented together with corresponding measuring variables derived from the instruments we described in Chapter 8. Some of these variables are general in the sense that, in the testings of our hypotheses, they form part of the correlations worked out with all measuring variables for the determination of initial attitudes and change. Others pertain specifically to different training objectives and to groups of measuring variables related thereto.

General background variables are designeted by the letters "bg" and specific background variables by "bs". In reporting on the specific background variables we shall indicate the respective training objectives (To) to which they correspond.

For practical reasons, the background hypotheses on initial attitudes and change are here shown together.

Hb 1. *a) Initial attitudes and b) change covary with age*
bg 1 Age expressed in number of years (from B 1)
Hb 2. *a) Initial attitudes and b) change covary with intellectual ability*
bg 2 Results of B 3 (Raven's matrices)
Hb 3. *a) Initial attitudes and b) change covary with flexibility*
bg 3 Results of B 4 (flexibility-rigidity scale, version by Rubenowitz)
Hb 4. *a) Initial attitudes and b) change covary with knowledge*

All measuring variables from B 13.

Specific background variables related to To 1—5 (business organization).

bs K 1 Establishment of corporate aims and objectives.
bs K 12 Management (duties of president).
bs K 13 Formulation of written policy for executives.
bs K 14 Performance measurement and control of executives.
bs K 27 Scientific research in business organization.

Specific background variables related to To 6—8 (personnel administration).

bs K 15 Personnel management (as exercised by top executive).
bs K 16 Internal information and communication.
bs K 17 Recruitment and selection of personnel.
bs K 18 Induction of new hires.
bs K 19 Training of personnel.
bs K 29 Scientific research in personnel administration.

Specific background variables related to To 9—11 (business economics).

bs K 2 Purchasing.
bs K 3 Market analysis.
bs K 4 Sales management.
bs K 5 Marketing.
bs K 10 Finance (procurement and administration of capital).
bs K 11 Accounting.
bs K 20 Profitability analyses.
be K 21 Liquidity.
bs K 22 Choice of product mix.
bs K 23 Pricing.
bs K 24 Costing, direct method.
bs K 25 Costing, absorption method.

Specific background variables related to To 12 (scientific method — research).

bs K 27 Scientific research in business organization.
bs K 28 Scientific research in business economics.
bs K 29 Scientific research in personnel administration.

Hb 5. *a) Initial attitudes and b) change covary with job experience*

1. Specific background variables from measuring instrument B 13, corresponding to the previous knowledge variables. (For content, see K variables under previous hypothesis.)

Specific background variables related to To 1—5 (business organization): bs E 1, E 12, E 13, E 14, E 27.

Specific background variables related to To 6—8 (personnel administration): bs E 15, E 16, E 17, E 18, E 19, E 29.

Specific background variables related to To 9—11 (business economics): bs E 2, E 3, E 4, E 5, E 10, E 11, E 20, E 21, E 22, E 23, E 24, E 25.

Specific background variables related to To 12 (scientific method — research): bs E 27, E 28, E 29.

2. Specific background variables related to To 3:

bs J I 1	Experience of production	Evaluation from B 1
bs J I 2	Experience of purchasing	„ „ „

bs J I 3 Experience of selling Evaluation from B 1
bs J I 4 Experience of finance ” ” ”
bs J I 5 Experience of accounting ” ” ”
bs J I 6 Experience of administration ” ” ”
bs J I 7 Experience of personnel administration ” ” ”
bs J I 8 Experience of top management ” ” ”
3. bg 4 Breadth of experience, index obtained from evaluations bs J I 1—8.

Hb 6. *a) Initial attitudes and b) change covary with present job duties*

All measuring variables have been derived from evaluations of B 1. The evaluations are based on estimates of the extent to which certain areas of subject matter should have particular relevance for the participants in their present jobs.

Specific background variables related to To 1—5 (business organization):

bs J II 1 Analyses of company objectives.
bs J II 2 Work of coordinating resources.
bs J II 3 Work of formulating and applying written policies.
bs J II 4 Work with performance measurement and control.
bs J II 5 Personnel management.
bs J II 6 Internal information and communication.
bs J II 7 Personnel administration.
bs J II 8 Profitability analyses.
bs J II 9 Liquidity.
bs J II 10 Methods of costing.
bs J II 11 Scientific method.

Hb 7. *a) Initial attitudes and b) change covary with reasons for attending course*

bg 7 Attendance at course planned by company (from B 2)
bg 8 Attendance at course matter of "laissez-faire" (from B 2)
bg 9 Attendance at course a planned step towards promotion (from B 2)

Hb 8. *a) Initial attitudes and b) change covary with policies within the organization and "proximity" to these policies*

All measuring variables have been derived from instruments B 5—B 11.

Specific background variables related to To 1—5 (business organization:

bs B 5 a "Our company's policy in organizational matters" (own influence, personal opinion).

Specific background variables related to To 6—8 (personnel administration:

bs B 5 b "Our company's policy in personnel matters" (own influence, personal opinion).

Specific background variables related to To 9—11 (business economics):

bs B 5 c "Our company's policy in matters of business economics" (own influence, personal opinion).

Specific background variables related to To 4:

bs B 6 "Written policies" (company policy, personal opinion).

Specific background variables related to To 5:

bs B 7 "Performance measurement and control" (company policy, personal opinion).

Specific background variables related to To 7:

bs B 9 "Internal information and communication" (company policy, personal opinion).

Specific background variables related to To 8:

bs B 8 "Recruitment and selection" (company policy, personal opinion).

Specific background variables related to To 10:

bs B 10 "Liquidity questions" (company policy, personal opinion).

Specific background variables related to To 11:

bs B 11 "Methods of costing" (company policy, personal opinion).

General background variables:

bg 5 Degree of general influence in own organization, index derived from B 5 a—c.

bg 6 Degree of positiveness in personal opinion of own organzation's policies, index derived from B 5 a—c.

Hb 9 *a) Initial attitudes and b) change covary with interests*

All variables come form measuring instrument B 12.

Specific background variables related to To 1—5 (business organization):

bs I 1 On business organization in general.
bs I 4 On research in business organization.
bs I 7 On corporate aims and objectives.
bs I 8 On coordination of company resources.
bs I 9 On clarification and application of company policies.
bs I 10 On performance measurement and control of executives.
bs I 11 On written guidelines.

Specific background variables related to To 6—8 (personnel administration):

bs I 2 On personnel administration in general.
bs I 5 On research in personnel administration.
bs I 12 On internal information and communication.
bs I 13 On groups and leadership.
bs I 14 On motivation and productivity.
bs I 15 On recruitment, selection, transfers and promotions.
bs I 16 On labor turnover.

Specific background variables related to To 9—11 (business economics):

bs I 3 On business economics in general.
bs I 6 On research in business economics.
bs I 17 On profitability analyses.
bs I 18 On marketing.
bs I 19 On liquidity.
bs I 20 On methods of costing.
bs I 21 On financing.

Specific background variables related to To 12 (scientific method):

bs I 4 On research in business organisation.
bs I 5 On research in personnel administration.
bs I 6 On research in business economics.

Chapter 10

RELATIONSHIPS BETWEEN INITIAL ATTITUDES AND BACKGROUND

General arguments in support of the statistical analysis

As will have emerged from the description of measuring variables included in the determination of attitudes and background factors, a large number of variables have been employed. It is possible to draw on different strategies in the utilization of data from these variables for analytical purposes. Thus one can try to compress these data before applying them to hypothesis-testing. Compression has the following points to recommend it:

- It becomes possible to avoid contaminations of results which arise from highly intercorrelated items within each determination of backgrounds and attitudes.
- Further analysis becomes easier to perform and produces a clearer picture.
- Costs and work input are reduced.
- More reliable measuring results can be obtained on which to base further analyses.

Although this strategy confers obvious advantages and is generally to be preferred, the individual researcher must make his choice with reference to the specific nature of his project and the objects he has in mind. In our own project, we have admittedly set up three main hypotheses, which we have considered valid on the strength of previous research, theories, and our own pilot surveys. But since it is necessary for us to elucidate these hypotheses for different areas of training corresponding to the training objectives, as well as for general and specific background factors, we approach the explorative aspect of our study. The more we reify attitudes for the determination of initial standing and change, and of background variables down to item level, the more this explorative character is underlined. Given the combination of hypothesis-testing and exploration we have adopted, it follows that we cannot be chiefly concerned with a general testing of the main hypotheses. We also seek to test the subhypotheses on background and to shed some searching light on the problems involved. It is our hope that the latter aim will provide stimuli for further research as well as the means for setting up hypotheses for such research.

These considerations have persuaded us against adopting a strategy which requires the initial compression of data (for example, discrete data, background variables, initial standing and measures of change could be grouped by resort to factor analysis). A principal reason why we wish to study relationships in conformity with the main hyotheses at item level is that we do not want to risk the loss of information whose relevance we cannot determine in advance.

Further, a compression of data for determination of attitudes before and after training would confront us with extremely perplexing problems of the kind we discussed in Chapter 4 under the heading, "Technical problems in measuring psychological change". We would very likely have to figure on a change structure in our measuring instruments between pretest and posttest. In that case there would arise the insoluble problem of having to deal with non-commensurable units for the measurement of change. Accordingly, we have elected a strategy which means that we shall primarily be working at item level. But in having made this choice, we also accept certain drawbacks: the risk of contaminated results to some extent, a body of data made unwieldy by its bulk, the possibility that certain measuring instruments will fall short of satisfactory reliability, etc.

In this chapter we shall set forth and discuss the findings which fall under main hypothesis I: INITIAL ATTITUDES AND BACKGROUND VARIABLES COVARY.

The chapter is divided into three parts:

— Plan and methods of statistical analysis.

— An account of the relations between single background variables and corresponding attitude variables, together with summarized results of relationships involving the use of multivariate methods.

— A summary of findings for hypothesis-testing and explorative discussion.

Plan of statistical analysis

Before we present a plan for the statistical analysis of data, attention is again called to the following:

An interview survey (see Chap. 6) dealing with training objectives has yielded 12 such objectives, which can be grouped into four principal fields of training:

Business organization	(T I)	training objectives To 1—5
Personnel administration	(T II)	training objectives To 6—8
Business economics	(T III)	training objectives To 9—11
Scientific method in management	(T IV)	training objective To 12

In order to measure the initial standing and change which correspond to these objectives, we have devised two instruments, the Semantic Differential scales and the Questionnaire (from which, however, only a limited number of items are included for most of the further analyses).

The background variables (see Chap. 7) are divided into two groups:

General background variables (bg), which form part of all calculations of associations with the attitude variables named; and specific background variables (bs), which are grouped to match the four principal training fields (T 1—T 4). The relationships between bs variables and initial attitudes pertain to each field separately.

Fig. 5. *Plan of analysis, main hypothesis I: Initial attitudes and background variables covary.* (A separate plan is given in Fig. 6 for measuring instruments B 5 — B 11, used in testing background hypothesis Hb 8).

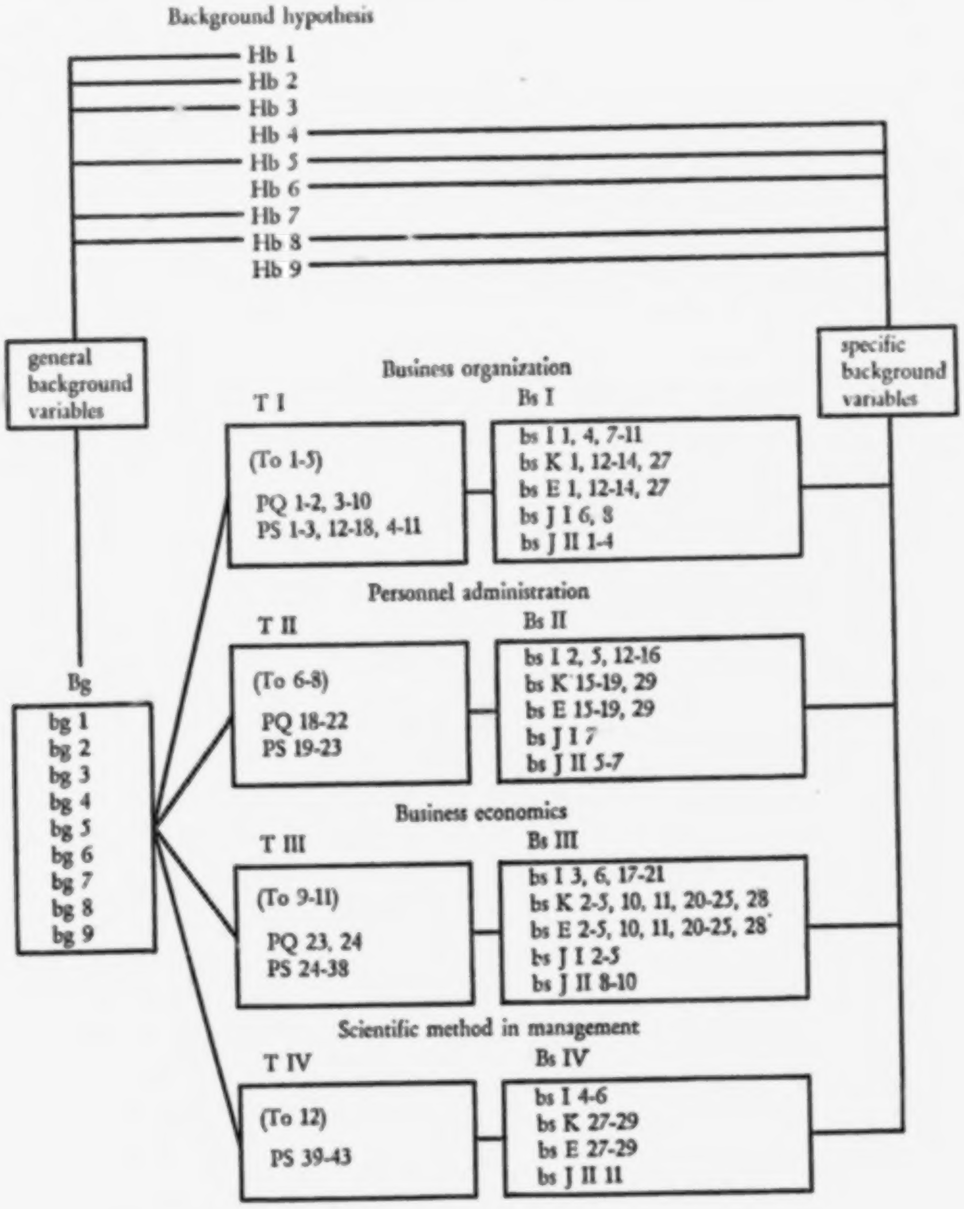
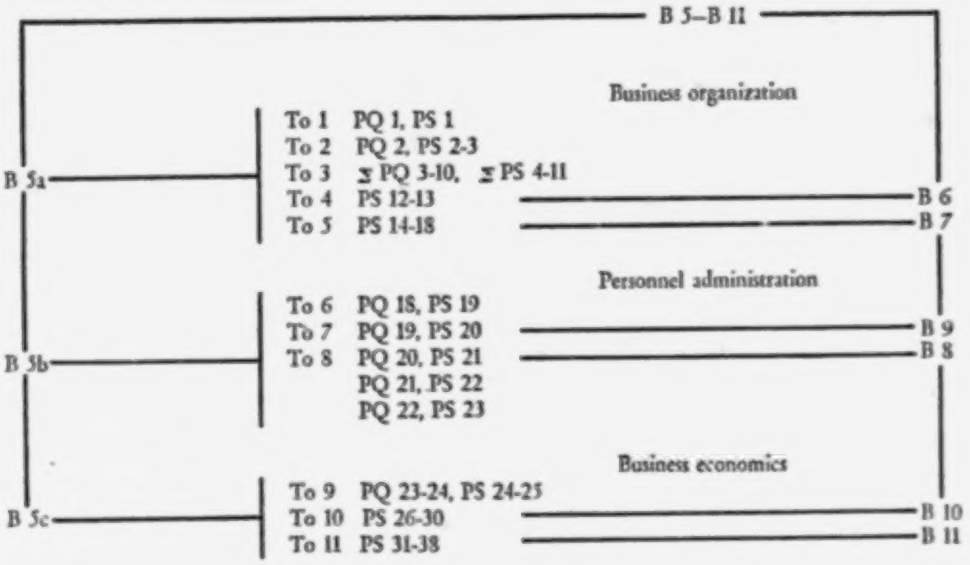

Background hypothesis
Hb 1
Hb 2
Hb 3
Hb 4
Hb 5
Hb 6
Hb 7
Hb 8
Hb 9
general background variables
specific background variables
Business organization
T I
(To 1-5)
PQ 1-2, 3-10
PS 1-3, 12-18, 4-11
Bs I
bs I 1, 4, 7-11
bs K 1, 12-14, 27
bs E 1, 12-14, 27
bs J I 6, 8
bs J II 1-4
Personnel administration
T II
(To 6-8)
PQ 18-22
PS 19-23
Bs II
bs I 2, 5, 12-16
bs K 15-19, 29
bs E 15-19, 29
bs J I 7
bs J II 5-7
Business economics
T III
(To 9-11)
PQ 23, 24
PS 24-38
Bs III
bs I 3, 6, 17-21
bs K 2-5, 10, 11, 20-25, 28
bs E 2-5, 10, 11, 20-25, 28
bs J I 2-5
bs J II 8-10
Scientific method in management
T IV
(To 12)
PS 39-43
Bs IV
bs I 4-6
bs K 27-29
bs E 27-29
bs J II 11
Bg
bg 1
bg 2
bg 3
bg 4
bg 5
bg 6
bg 7
bg 8
bg 9

Fig. 6. *Plan of analysis* to test Hb 8: Initial attitudes and policies within the organization and "proximity" to these policies covary.


B 5–B 11
Business organization
B 5a
To 1 PQ 1, PS 1
To 2 PQ 2, PS 2-3
To 3 Σ PQ 3-10, Σ PS 4-11
To 4 PS 12-13
To 5 PS 14-18
B 6
B 7
Personnel administration
B 5b
To 6 PQ 18, PS 19
To 7 PQ 19, PS 20
To 8 PQ 20, PS 21
PQ 21, PS 22
PQ 22, PS 23
B 9
B 8
Business economics
B 5c
To 9 PQ 23-24, PS 24-25
To 10 PS 26-30
To 11 PS 31-38
B 10
B 11

Methods of statistical analysis

Our data on the background of participants have been obtained from highly disparate measuring variables: scales such as Raven's progressive matrices, single items as derived from filled-in forms indicating knowledge and experience, and so on. The distributions obtained were often greatly skewed, especially with reference to variables at item level. We therefore saw fit to dichotomize all background variables (an exception was made for instrument B 5—B 11, which has a design that required classification of the experimental population into subgroups). Initial attitudes were obtained from the Semantic Differential scales (PS 1—43) and the Questionnaire (PQ 1—42). Data from the Questionnaire were employed without standardization, since these yieldeed satisfactory distributions. However, the distributions for the PS variables were highly skewed, and so we standardized these variables. For this purpose we elected to draw on five-point normal-distribution scales. Apart from a very few exceptions, the standardization could be carried out with good adjustment of the data to a normal distribution. In order to relate single background variables to corresponding attitude variables in the grouping shown in Fig. 5, we computed point-biserial correlations. This yielded a number of correlation matrices, consisting of bivariate correlations between background and attitude variables, which could be applied to the testing and explorative discussion of background hypotheses.

The background hypotheses scarcely lend themselves to testing unless the data are further reduced. In cases where a background variable is related to a set of initial attitude variables, we have drawn on the multiple correlation technique to permit the determination of more general relationships. However, the correlation matrices predominantly contain two sets of variables relating to background and initial attitudes. As was noted earlier, one solution in cases of this kind would be to compress the data in both sets by means of a method based on factor analysis. But insofar as we have multidimensionality in the data sets, such a method does not permit a direct testing of the background hypotheses, either.

Cooley & Lohnes (1962, pp. 41—43) suggest an additional possibility, namely the canonical correlation technique. For a review of the use of this technique the authors cite a study whose hypothesis-testing situation accords well with that governing our tests of background hypotheses. The study referred to (conducted by Roe-Siegelman in 1962) sought, with the help of two sets of variables pertaining to "Early Home Environment" and "Present Orientation towards People" to test the general hypothesis that the former is significantly related to the latter. According to Cooley & Lohnes, the canonical correlation technique offers a recommendable approach to testing this hypothesis.

Canonical correlations may thus be applied towards the study of interrelations between two sets of measurements, in our case between sets of background variables and corresponding attitude variables as shown in Fig. 5. To quote Cooley & Lohnes (p. 35), the canonical correlation can be defined as "the maximum correlation between linear functions of the two sets of variables". For a mathematical description of the method, the test of significance of the correlations, its application in the behavioral sciences, and a program for machine tabulation, reference is made to the work of these authors (op. cit., pp. 35).

As previously mentioned the object of analyses by means of canonical correlations is to see if the covariation between variables of two different sets is stronger than can reasonably be attributed to chance. The strength of the "aggregate" correlation between the variables of the two sets can be tested by means of an approximate x^2-test due to Bartlett. The aggregate correlation may be described by a set of correlation coefficients called canonical correlation coefficients. The size of these correlations should be viewed both in relationship to the number of variables in the two sets and in relationship to the number of individuals studied. The first coefficient of canonical correlation, R_1, is of special interest in so far as it yields the maximum correlation that can be obtained between two variables each being determined (linearly) by the variables in one of the two sets. In presenting data below, R_1 is given and the result of the x^2-test mentioned above is indicated in each case.

Some of the background hypotheses did not have more than one variable to draw on for testing. In these cases the interrelations with corresponding attitude variables were analyzed by use of the multiple correlation technique.

To test those background hypotheses where instrument B 5—B 11 was included for measuring background variables, the calculations of relationships between the results from this and corresponding sets of attitude variables permitted only limited use of the correlation methods stated above, since the instrument does not usually yield variables which can be regarded as continuous. The data from B 5—B 11 have instead enabled us to subgroup the population according to different characteristics. With that as a starting point, tests of correlations with attitude variables could be made with the help of analysis of variance and multivariate analysis of variance (by this we mean the generalization of univariate analysis of variance).

In univariate analysis of variance, the researcher confines himself to one dependent variable. The simplest case is one in which he has several groups of individuals, where he tries to find out whether the intergroup differences are so large that they would seldom arise in a random distribution of individuals. Each group is characterized by a group mean value over the dependent variable, and intergroup differences are measured in terms of variance between these means. In multivariate analysis of variance, several dependent variables are studied at the same time. The approach to the problem is the same as in univariate analysis. Each group of individuals is characterized by several means, and intergroup differences are measured in a test criterion which is dependent on both variation and covariation between these means. The test in this case is carried out as an approximate chi-square test, where degrees of freedom are determined as product of the number of dependent variables on the one hand, and the number of groups minus one on the other.

Results and discussion of findings on relation between initial attitudes and background

As we pointed out earlier, our study has both a hypothesis-testing and explorative character. When we now are going to present our results we therefore think it in order to complement the results by setting forth the conclusions from our hypothesis-testings, supplemented by explorative discussions of the findings. Not all the findings will give rise to discussion, whereas considerable space for this purpose has been provided in respect of findings for other hypotheses.

In regard to background hypotheses, we have had a common set of these in order to determine the interrelations of initial attitudes and change. As has already been noted, this does not suggest that we have considered the hypothesis set to be of equal relevance for both. Certain hypotheses: Hb 1 (age), Hb 2 (intellectual ability), Hb 3 (flexibility) and Hb 8 (reasons for attending course) were primarily chosen to illuminate the relation between background and change.

INITIAL ATTITUDES COVARY WITH AGE

Hypothesis Hb 1.
PQ—PS variables are found in appendix.

Table 13. *Correlations between bg 1(age) and PQ—PS variables.* N = 140. Correlations $\geq$ .17 are significantly $\neq$ 0 at the 5 per cent level.

Business organization

PQ 1	PQ 2	ΣPQ 3-10	PS 1	PS 2	PS 3	PS 12	PS 13	PS 14
—.08	.03	.07	.07	.06	.02	.01	.10	*.17*
PS 15	PS 16	PS 17	PS 18	ΣPS 4-11				
.10	.03	.03	—.09	.04				

Personnel administration

PQ 18	PQ 19	PQ 20	PQ 21	PQ 22	PS 19	PS 20	PS 21	PS 22
.02	*—.17*	—.12	—.08	—.08	.11	.08	.04	*.17*
PS 23								
.13								

Business economics

PQ 23	PQ 24	PS 24	PS 25	PS 26	PS 27	PS 28	PS 29	PS 30
—.17	—.02	—.04	—.09	.06	.03	—.10	.00	.09
PS 31	PS 32	PS 33	PS 34	PS 35	PS 36	PS 37	PS 38	
.12	.01	.08	.03	*.18*	*.17*	.16	.11	

Scientific method in management

PS 39	PS 40	PS 41	PS 42	PS 43
.04	—.06	.04	.02	.11

Business organization	Multiple correlation		R = .31	$p > .05$
Personnel administration	,,	,,	R = .31	$p > .05$
Business economics	,,	,,	R = .43	$p > .05$
Scientific method in management	,,	,,	R = .17	$p > .05$

The findings do not support a conclusion that age and initial attitudes are systematically related with one another.

INITIAL ATTITUDES COVARY WITH INTELLECTUAL ABILITY

Hypothesis Hb 2.
PQ—PS variables are found in appendix.

Table 14. *Correlations between bg 2 (Raven's matrices) and PQ—PS variables.*

$N=140$. Correlations $\geq .17$ are significantly $\neq 0$ at the 5 per cent level.

Business organization

PQ 1	PQ 2	ΣPQ 3-10	PS 1	PS 2	PS 3	PS 12	PS 13	PS 14
—.02	.06	—.06	*—.29*	*—.28*	*—.27*	—.10	—.14	*—.17*

PS 15	PS 16	PS 17	PS 18	ΣPS 4-11
—.25	*—.30*	*—.18*	—.11	*—.28*

Personnel administration

PQ 18	PQ 19	PQ 20	PQ 21	PQ 22	PS 19	PS 20	PS 21	PS 22
—.06	*—.17*	—.15	—.16	*—.27*	—.15	*—.20*	*—.29*	*—.21*

PS 23
—.24

Business economics

PQ 23	PQ 24	PS 24	PS 25	PS 26	PS 27	PS 28	PS 29	PS 30
—.07	.05	*—.18*	*—.19*	*—.19*	—.11	—.18	—.04	.09

PS 31	PS 32	PS 33	PS 34	PS 35	PS 36	PS 37	PS 38
—.15	—.14	*—.20*	—.03	*—.19*	—.15	—.16	*—.18*

Scientific method in management

PS 39	PS 40	PS 41	PS 42	PS 43
—.12	*—.18*	—.11	*—.19*	*—.21*

Business organization	Multiple correlation		R= .44	p < .05
Personnel administration	„	„	R= .41	p < .05
Business economics	„	„	R= .37	p > .05
Scientific method in management	„	„	R= .26	p > .05

Raven's progressive matrices (bg 2) were used as a measure of intellectual ability.

The findings support this hypothesis in two of the four main training fields: business organization and personnel administration. The correlations here, as well as all single significant correlations in the two other fields, point in a negative direction.

Discussion

As mentioned, this background variable was one of those primarily linked to the hypotheses on relationship with change. The negative correlations with initial attitudes we obtained cannot without anything further be taken to indicate that the more able participants are less positive in their initial attitudes toward certain training fields. It is perhaps more probable that these correlations express the existence of some sort of a response set factor.

However, this assumption may be questioned if we adopt the definition of response set formulated by Cronbach (1946, p. 476): "A response set is defined as any tendency causing a person consistently to give different responses to test items than he would when the same content is presented in a different form." In our material the negative correlations derive from both the Questionnaire and the Semantic Differential scales, which of course are highly dissimilar.

Given this disparity, it is not likely that we would have a response set in our case which is specifically related to a type of instrument, but rather a set that operates within a wider range of meaning. The negative correlations might be explained by a greater disinclination on the part of the more intelligent persons to mark extreme positions on the scales. (The distributions are chiefly skewed in the sense that our subjects occupy the positive end of the scales.) This view finds support in a study by Light, Zax & Gardiner (1965), who examined the relationship of intelligence level to extreme response style. Making use of semantic differential scales, the authors found that persons at a higher intellectual level were less inclined to identify themselves with extreme positions than persons at a lower level.

INITIAL ATTITUDES COVARY WITH FLEXIBILITY

Hypothesis Hb 3.

PQ—PS variables are found in appendix.

Table 15. *Correlations between bg 3 (flexibility) and PQ—PS variables.*

N = 140. Correlations ≥ .17 are significantly ≠ 0 at the 5 per cent level.

Business organization

PQ 1	PQ 2	ΣPQ 3-10	PS 1	PS 2	PS 3	PS 12	PS 13	PS 14
.03	—.16	—.15	*—.18*	*—.17*	*—.18*	*—.17*	—.04	—.08
PS 15	PS 16	PS 17	PS 18	ΣPS 4-11				
—.17	—.11	—.07	.02	*—.17*				

Personnel administration

PQ 18	PQ 19	PQ 20	PQ 21	PQ 22	PS 19	PS 20	PS 21	PS 22
—.13	—.03	—.12	—.07	*—.24*	—.08	.01	—.06	*—.19*
PS 23								
—.06								

Business economics

PQ 23	PQ 24	PS 24	PS 25	PS 26	PS 27	PS 28	PS 29	PS 30
—.04	—.04	*—.17*	—.05	—.16	.01	—.04	.03	—.10
PS 31	PS 32	PS 33	PS 34	PS 35	PS 36	PS 37	PS 38	
—.06	—.11	—.01	—.05	*—.25*	*—.17*	*—.18*	*—.19*	

Scientific method in management

PS 39	PS 40	PS 41	PS 42	PS 43
—.07	*—.17*	*—.17*	*—.18*	—.08

Business organization	Multiple	correlation	R = .41	p < .05
Personnel administration	„	„	R = .36	p < .05
Business economics	„	„	R = .42	p > .05
Scientific method in management	„	„	R = .23	p > .05

As a measure of flexibility, we used a flexibility—rigidity scale in a version by Rubenowitz (bg 3).

Our findings support this hypothesis in two fields, business organization and personnel administration. The correlations here, as well as all single significant correlations, point negatively.

Discussion

Degree of flexibility as a background variable is likewise primarily attached to the hypotheses on relationship with change. The findings also greatly resemble those obtained under the previous hypothesis. The significant correlations recur in the same training fields and they point in the same negative direction. Here again we find it difficult to imagine that a really negative relationship exists between flexibility and initial attitudes. In line with our discussion under Hb 2, a more general response set factor would appear to be operating in the sense that more flexible participants are less inclined to mark extreme positions on the attitude scales.

Discussion of Hb 4 (see table 16)

The data for testing this hypothesis were furnished by a four-point scale, on which participants were asked to indicate their knowledge in different fields related to the course content (B 13). In none of the four main fields do the findings express any general relationship in accordance with the hypothesis. Single significant correlations point largely in a positive direction.

It might appear surprising that we have not found any main field within which the findings give general support to the hypothesis. The acquisition of knowledge, of course, constitutes an important basis for all attitude formation. Perhaps the likeliest interpretation is that our method of measuring knowledge is defective. In resorting to subjective evaluations for this purpose, we were well aware that we incurred serious risks of impaired reliability and validity. But as we noted earlier, it was impossible for practical reasons to construct achievement tests for the different fields.

But even in the absence of general relationships, there is reason to ask: Do the single correlations pertaining to separate fields reveal a pattern which might give limited support to the hypothesis? It is in business economics that most of the significant correlations occur.

In this field the two important topics as regards initial attitudes are a) liquidity (PS 26—30) and b) costing methods (PS 31—38).

In order to find out if there seems to be any meaningful patterns in

INITIAL ATTITUDES COVARY WITH KNOWLEDGE

Hypothesis Hb 4.

bs K variables are presented together with the results.
PQ—PS variables are found in appendix.

Table 16. *Correlations between bs K variables (knowledge) and PQ—PS variables.* N = 140. Correlations ≥ .17 are significantly ≠ 0 at the 5 per cent level.

Business organization

knowledge of	PQ 1	PQ 2	ΣPQ 3-10	PS 1	PS 2	PS 3	PS 12	PS 13	PS 14	PS 15	PS 16	PS 17	PS 18	2 PS 4-11
bs K 1. Establishment of corporate aims and objectives.	.05	.03	.03	.07	.04	.13	.10	—.09	.03	.00	.00	.02	.08	.04
bs K 12. Management (duties of president)	.15	—.08	—.05	.19	.05	.15	.04	.06	.18	.11	.08	.13	.15	.11
bs K 13. Formulation of written policies for executives.	.12	.13	—.09	.14	.13	.19	.25	.16	.20	.09	.13	.17	.17	.09
bs K 14. Performance measurement and control of executives.	.07	.05	—.02	.09	.12	.13	—.04	.17	—.07	—.07	.08	.09	.17	.08
bs K 27. Scientific research in corporate organization.	—.01	—.05	.03	.05	.07	—.02	—.03	.04	—.05	—.13	—.05	—.03	.01	—.05

Personnel administration

knowledge of	PQ 18	PQ 19	PQ 20	PQ 21	PQ 22	PS 19	PS 20	PS 21	PS 22	PS 23
bs K 15. Personnel management (as exercised by top executive).	.08	—.06	.05	.00	.03	.15	.17	.06	.06	.19
bs K 16. Internal information and communication.	.02	—.15	.01	—.04	.01	.13	.07	—.01	—.08	.10
bs K 17. Recruitment and selection of personnel.	.12	—.07	.11	.06	.05	.11	.08	.03	.05	.10
bs K 18. Induction of new hires.	*.21*	.01	.16	.10	.05	.13	.13	.07	.12	.11
bs K 19. Training of personnel.	.13	—.10	.05	.05	.05	.10	—.02	—.01	.08	.13
bs K 29. Scientific research in personnel administration.	—.06	—.11	.18	.12	.06	.02	—.02	—.01	—.04	—.01

Business economics

knowledge of	PQ 23	PQ 24	PS 24	PS 25	PS 26	PS 27	PS 28	PS 29	PS 30	PS 31	PS 32	PS 33	PS 34	PS 35	PS 36	PS 37	PS 38
bs K 2. Purchasing.	.02	—.13	*.26*	.12	.11	*.18*	.01	.03	—.05	*.19*	.13	.13	.16	*.19*	.12	.13	.12
bs K 3. Market analysis.	.03	—.09	*.22*	*.17*	.07	.15	.09	—.13	.02	.14	.06	.02	*.26*	.05	.06	.08	.01
bs K 4. Sales management.	.15	*—.18*	*.20*	.13	.16	*.24*	.04	.02	.03	.09	.01	—.01	.10	.13	.11	.15	.14
bs K 5. Marketing.	—.01	—.05	.15	.05	.04	.08	.01	—.15	.07	.14	.10	.04	*.26*	—.02	.00	.02	—.07
bs K 10. Finance (procurement and administration of capital).	.08	—.09	*.17*	.13	.15	.10	*.27*	.06	—.07	*.17*	*.17*	*.28*	.15	.03	.12	*.17*	.06
bs K 11. Accounting.	.01	—.06	.06	.00	—.02	—.01	.11	.02	—.05	.04	—.06	.09	.03	—.09	.02	—.05	—.06
bs K 20. Profitability analyses.	.06	—.02	.13	.14	.04	.10	*.18*	—.13	*—.19*	*.18*	.03	.16	.15	—.11	.05	—.03	—.02
bs K 21. Liquidity.	.10	—.01	.16	*.17*	.09	.07	*.26*	.06	—.11	*.24*	.16	*.28*	*.19*	—.05	.05	.08	—.02
bs K 22. Choice of product mix.	—.02	—.05	.14	.14	.01	.11	.05	—.06	—.09	.12	.06	.16	.05	—.03	.09	.11	—.03
bs K 23. Pricing.	.08	—.12	*.19*	*.21*	.09	.14	.10	.02	—.09	*.21*	.06	.15	.15	—.02	.05	.08	.05
bs K 24. Costing, direct method.	.03	—.05	.08	.10	.09	.09	*.18*	—.09	—.12	*.30*	*.21*	*.26*	*.18*	*—.18*	—.10	—.10	—.11
bs K 25. Costing, absorption method.	.04	—.02	.12	.09	.06	.09	.11	—.13	—.09	.14	.07	.14	.09	.06	.03	.02	.04
bs K 28. Scientific research in business economics.	.02	.03	—.08	.04	—.04	—.06	—.02	.04	.00	.02	—.09	.08	—.04	*—.21*	—.07	—.07	.00

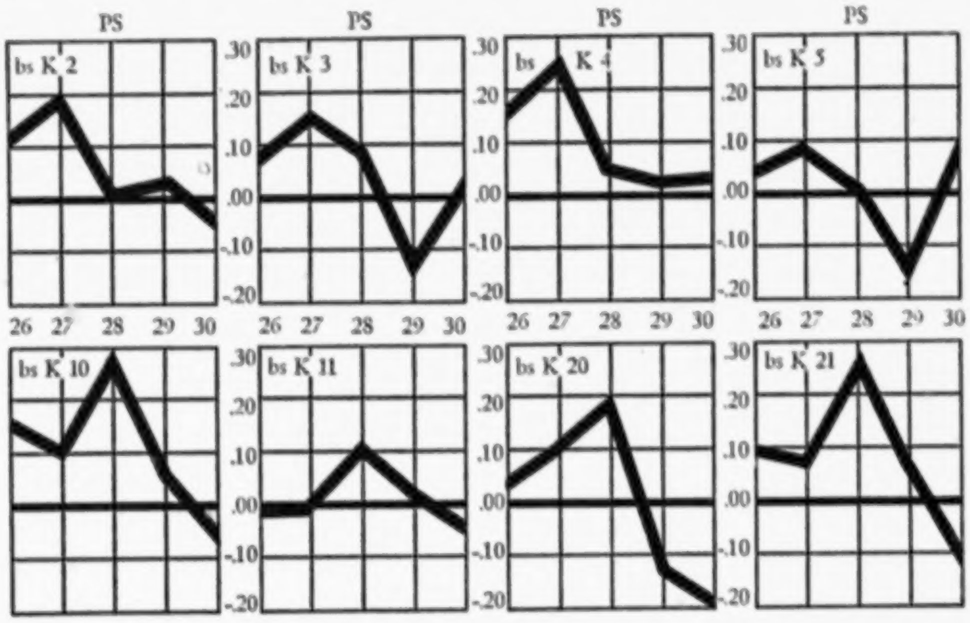
Scientific method in management

knowledge of	PS 39	PS 40	PS 41	PS 42	PS 43
bs K 27. Scientific research in business organization.	.08	.03	—.02	—.05	.09
bs K 28. Scientific research in business economics.	.05	.02	—.06	—.02	.02
bs K 29. Scientific research in personnel administration.	.04	—.07	—.04	—.01	.10

Business organization	Maximum canonical correlation	$R_1 = .45\ p > .05$
Personnel administration	”	$R_1 = .34\ p > .05$
Business economics	”	$R_1 = .59\ p > .05$
Scientific method	”	$R_1 = .25\ p > .05$

these areas, we have compared the correlations between certain bs K variables and initial attitudes relating to both topics. The compilations are described and discussed below.

Fig. 7. *Correlations between certain bs K variables and PS variables.*



The correlational structure shown in figure 7 would appear to break down into two groups. The first group consists of:

bs K 2 knowledge of purchasing work
bs K 3 knowledge of market analysis
bs K 4 knowledge of sales management
bs K 5 knowledge of marketing

In this group the highest correlations obtained are with initial attitude variables which express *high liquidity as a matter of principle.* (PS 26—27)

The second groups consists of:

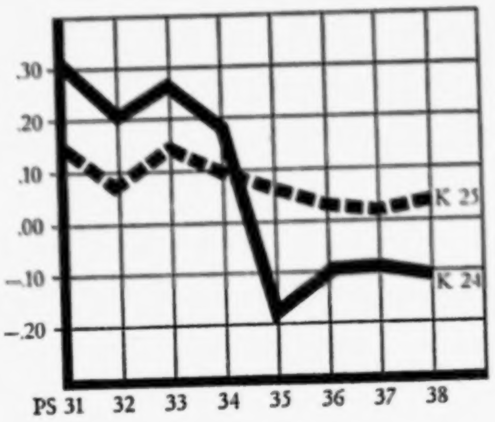
bs K 10 knowledge of financing work
bs K 11 knowledge of accounting
bs K 20 knowledge of profitability analyses
bs K 21 knowledge of liquidity matters

The highest correlations in this group are with initial attitude variables which express a *policy of adapting liquidity to company resources.* (PS 28—29)

If we assume the first group of knowledge variables to relate more to functional areas of business economics (and in that sense more peripheral), while the second group involves aspects of central importance to management, the derived pattern would seem to express a relevant difference between the two groups. In this topic area we think we can discern a tendency in our data which gives some support to the hypothesis that knowledge and initial attitudes covary.

As to costing methods, the initial attitude side contains four variables (PS 31—34) relating to direct costing and four (PS 35—38) to absorption costing. The correlations between bs K 24 (knowledge of direct costing) plus bs K 25 (knowledge of absorption costing) and the aforementioned initial attitude variables are given below.

Fig. 8. *Correlations between certain bs K variables and PS variables.*



bs K 24 Knowledge — costing with the direct method

bs K 25 Knowledge — costing with the absorption method

It will be noted from the diagram that bs K 24 (knowledge of direct costing) correlates positively at significant level with initial attitudes to direct costing. Corresponding bs K 24 correlations with initial attitudes to absorption costing show a negative tendency. The correlations between bs K 25 (knowledge of absorption costing) and initial attitude variables are slightly but consistently positive. In regard to bs K 24 a correlational pattern may be seen as supporting the hypothesis for this special field.

INITIAL ATTITUDES COVARY WITH JOB EXPERIENCE

Hypothesis Hb 5.

As was noted in the description of variables in Chapter 9, page 121, three types of background variables are included in the testing and explorative discussion of this hypothesis:

bs E variables from measuring instrument B 13; bs J I variables from measuring instrument B 1; bg 4 which is an index of brealth of experience derived from the bs J I variables. These background variables are given together with the results.

PQ—PS variables are found in appendix.

Table 17. *Correlations between bs E variables (job experience) and PQ—PS variables.*
N = 140. Correlations $\geq .17$ are significantly $\neq 0$ at the 5 per cent level.

Business organization

experience of	PQ 1	PQ 2	ΣPQ 3-10	PS 1	PS 2	PS 3	PS 12	PS 13	PS 14	PS 15	PS 16	PS 17	PS 18 2	PS 4-11
bs E 1. Establishment of corporate aims and objectives.	--.01	—.01	—.03	.13	.02	.08	.16	—.06	—.08	—.05	.06	.00	.01	.05
bs E 12. Management (duties of president).	.12	.05	.03	.06	—.02	.08	.15	—.02	—.01	.06	.06	.02	.04	.08
bs E 13. Formulation of written policies for executives.	.02	.02	—.05	.16	.07	.12	*.22*	.16	.09	.01	.13	.09	.10	.13
bs E 14. Performance measurement and control of executives.	.01	.15	—.04	.08	*.17*	*.21*	—.01	*.25*	.13	.08	*.19*	*.21*	.22	.15
bs E 27. Scientific research in corporate organization.	*.19*	—.06	—.08	—.03	.05	.06	.09	.04	.10	.05	.06	.02	—.02	.09

Personnel administration

experience of	PQ 18	PQ 19	PQ 20	PQ 21	PQ 22	PS 19	PS 20	PS 21	PS 22	PS 23
bs E 15. Personnel management (as exercised by top executive).	.15	.00	—.04	.05	—.04	.16	.14	.06	.10	.07
bs E 16. Internal information and communication.	.22	—.13	.00	.12	.03	.15	.02	.03	.07	.15
bs E 17. Recruitment and selection of personnel.	*.26*	.00	*.17*	.12	*.26*	*.20*	.16	*.20*	*.21*	*.27*
bs E 18. Induction of new hires.	.12	—.05	.14	.08	.00	.04	.10	.11	.14	.04
bs E 19. Training of personnel.	.09	—.20	.12	.00	.05	.08	.06	.12	.11	.13
bs E 29. Scientific research in personnel administration.	.04	—.15	*.18*	.08	.03	*.24*	.11	*.17*	*.22*	.11

Business economics

experience of	PQ 23	PQ 24	PS 24	PS 25	PS 26	PS 27	PS 28	PS 29	PS 30	PS 31	PS 32	PS 33	PS 34	PS 35	PS 36	PS 37	PS 38
bs E 2. Purchasing.	.04	.02	*.19*	.16	*.21*	*.21*	.05	—.07	—.14	.06	.01	.05	.13	*.17*	.12	.10	.08
bs E 3. Market analysis.	*.17*	—.11	*.28*	*.18*	*.23*	*.23*	.03	—.12	—.07	.10	.05	.04	*.22*	.13	.13	*.18*	.10
bs E 4. Sales management.	*.20*	—.09	*.27*	*.24*	*.20*	*.23*	.05	—.07	—.11	.11	.04	.07	*.18*	*.20*	*.18*	*.26*	*.18*
bs E 5. Marketing.	.14	—.14	*.26*	*.18*	*.17*	*.23*	—.02	—.10	—.07	.06	.00	—.02	.14	.09	.08	*.22*	.08
bs E 10. Finance (procurement and administration of capital).	.10	—.11	*.25*	*.18*	.06	.03	*.22*	*.20*	.01	.14	.11	*.19*	*.23*	—.05	.06	.09	.06
bs E 11. Accounting.	.02	—.04	.03	.00	.11	.11	.11	—.04	—.07	.06	.03	.13	.07	—.03	.02	.03	—.06
bs E 20. Profitability analyses.	—.08	—.10	*.18*	.13	*.18*	.15	.02	—*.20*	—.01	.07	—.02	.09	.09	.08	.10	.12	.12
bs E 21. Liquidity.	.11	—.04	*.24*	*.20*	.15	.10	*.20*	.07	—.02	*.21*	.12	*.21*	*.18*	—.03	—.01	.06	.03
bs E 22. Choice of product mix.	.06	—.07	*.17*	*.20*	.11	.12	—.04	.06	.11	*.18*	.10	*.19*	.16	.02	.11	.15	.02
bs E 23. Pricing.	.15	—.03	*.19*	.16	*.24*	*.17*	—.03	—.06	.02	.08	.01	.08	.09	.10	.06	.07	.13
bs E 24. Costing, direct method.	.00	—.08	*.17*	.15	.13	.14	.15	—.12	—*.17*	*.27*	.11	*.26*	*.17*	—*.18*	—.09	—.13	—.15
bs E 25. Costing, absorption method.	.01	.04	.12	.13	*.18*	*.17*	.10	—.09	—.09	.10	.04	.12	.09	.12	.09	.06	.14
bs E 28. Scientific research in business economics.	—.03	.01	.06	.11	.02	.04	—.02	—.08	—.07	.06	—.02	.07	—.06	.03	.11	.04	.10

Scientific method in management

experience of	PS 39	PS 40	PS 41	PS 42	PS 43
bs E 27. Scientific research in business organization.	.06	.03	—.07	—.05	.04
bs E 28. Scientific research in business economics.	.11	.08	.00	—.02	—.03
bs E 29. Scientific research in personnel administration.	.09	.05	.00	.00	.02

Business organization	Maximum canonical correlation	$R_1 = .45$ $p > .05$
Personnel administration	,,	$R_1 = .45$ $p < .05$
Business economics	,,	$R_1 = .57$ $p > .05$
Scientific method	,,	$R_1 = .24$ $p > .05$

RELATIONSHIPS BETWEEN bg 4 (BREADTH OF EXPERIENCE) AND PQ—PS VARIABLES

PQ—PS variables are found in appendix.

Table 18. *Correlations between bg 4 (breadth of experience) and PQ—PS variables.* N=140. Correlations $\geq$ .17 are significantly $\neq$ 0 at the 5 per cent level.

Business organization

PQ 1	PQ 2	ΣPQ 3-10	PS 1	PS 2	PS 3	PS 12	PS 13	PS 14	PS 15	PS 16	PS 17	PS 18	ΣPS 4-11
.06	—.03	—.07	—.03	.00	.07	.10	.03	.09	.03	—.03	—.01	—.01	*.17*

Personnel administration

PQ 18	PQ 19	PQ 20	PQ 21	PQ 22	PS 19	PS 20	PS 21	PS 22	PS 23
.08	.01	—.13	—.05	*—.20*	.11	.14	.13	.15	—.06

Business economics

PQ 23	PQ 24	PS 24	PS 25	PS 26	PS 27	PS 28	PS 29	PS 30
.03	.07	.06	—.08	.08	.09	.00	—.09	.10

PS 31	PS 32	PS 33	PS 34	PS 35	PS 36	PS 37	PS 38
.03	—.01	.09	.03	.05	.03	.03	.01

Scientific method in management

PS 39	PS 40	PS 41	PS 42	PS 43
.10	—.04	—.07	.07	.03

Business organization	Multiple	correlation	$R=.33$	$p > .05$
Personnel administration	„	„	$R=.38$	$p < .05$
Business economics	„	„	$R=.30$	$p > .05$
Scientific method in management	„	„	$R=.16$	$p > .05$

RELATIONSHIPS BETWEEN bsJI VARIABLES (JOB EXPERIENCE) AND PQ—PS VARIABLES

bsJI variables are given below. PQ—PS variables are found in appendix.

bsJI 1 Experience of production	bsJI 5 Experience of accounting
bsJI 2 Experience of purchasing	bsJI 6 Experience of administration
bsJI 3 Experience of selling	bsJI 7 Experience of personnel administration
bsJI 4 Experience of finance	bsJI 8 Experience of top management

Table 19. *Correlations between bsJI variables (job experience) and PQ—PS variables.* N = 140. Correlations ≥ .17 are significantly ≠ 0 at the 5 per cent level.

Business organization

	PQ 1	PQ 2	Σ PQ 3-10	PS 1	PS 2	PS 3	PS 12	PS 13	PS 14	PS 15	PS 16	PS 17	PS 18	Σ PS 4-11
bs J I 6	.14	.15	.03	0.8	0.1	.14	.07	.13	*.19*	.11	—.01	.02	—.03	.16
bs J I 8	.06	.02	—.09	.04	.02	.01	.04	—.06	.01	—.02	.08	.05	.10	.07

Personnel administration

	PQ 18	PQ 19	PQ 20	PQ 21	PQ 22	PS 19	PS 20	PS 21	PS 22	PS 23
bs J I 7	.12	.01	.10	*.18*	.02	.12	.12	*.18*	*.21*	.09

Business economics

	PQ 23	PQ 24	PS 24	PS 25	PS 26	PS 27	PS 28	PS 29	PS 30	PS 31	PS 32	PS 33	PS 34	PS 35	PS 36	PS 37	PS 38
bs J I 2	—.12	.13	—.05	—.02	.13	.06	.02	—.15	—.16	—.07	—.06	.07	—.03	.10	.00	.05	—.05
bs J I 3	.09	—.15	*.19*	.06	.11	*.21*	—.02	—.11	—.07	—.02	—.08	.02	.14	.07	.08	*.17*	.10
bs J I 4	.14	.04	.16	.05	—.05	—.10	.09	.14	.07	.07	.02	.14	.25	—.14	—.13	—.05	—.14
bs J I 5	.07	.02	*.17*	.01	.08	.07	.10	—.03	—.07	.07	.04	.13	.10	.09	.09	.07	.04

Business organization	Maximum canonical correlation	$R_1 = .40$ $p > .05$
Personnel administration	Multiple correlation	$R = .28$ $p < .05$
Business economics	Maximum canonical correlation	$R_1 = .51$ $p > .05$

RELATIONSHIPS BETWEEN bsJI VARIABLES (JOB EXPERIENCE AND PQ—PS VARIABLES (INITIAL ATTITUDES TO CORRESPONDING AREAS).

bsJI variables are found on page 178. PQ—PS variables are found in appendix.

Table 20. *Correlations between bs J I I 1—8 (job experience) and PQ 3—10, PS 4—11 (initial attitudes to corresponding areas)*
N = 140. Correlations $\geq .17$ are significantly $\neq 0$ at the 5 percent level.

	PQ 3	PQ 4	PQ 5	PQ 6	PQ 7	PQ 8	PQ 9	PQ 10	PS 4	PS 5	PS 6	PS 7	PS 8	PS 9	PS 10	PS 11
bs J I 1	*.28*	—.05	—.05	.02	—.10	—.16	*—.22*	—.05	.15	—.01	*—.17*	—.04	—.09	—.09	—.16	—.04
bs J I 2	.11	—.02	—.06	.03	—.04	—.12	—.03	.10	.13	*.17*	*.18*	.05	.03	.07	.01	.12
bs J I 3	—.02	.10	.11	.10	.05	.10	.15	.00	—.07	.13	*.28*	—.03	.06	.13	*.19*	*.17*
bs J I 4	*—.24*	.06	—.10	*.18*	*.19*	.16	*.21*	—.04	*—.17*	.11	.10	.07	.15	.13	.03	*.20*
bs J I 5	—.02	.04	.01	.11	.12	*.17*	*.23*	.11	.02	.14	.12	.13	*.22*	*.24*	.11	*.23*
bs J I 6	.02	—.04	.01	—.06	—.03	—.02	.02	.09	.04	.12	.09	—.03	*.21*	*.27*	.11	*.21*
bs J I 7	.02	.01	—.02	—.12	—.03	.01	.05	.05	.09	.15	.04	.08	.11	*.24*	*.18*	.05
bs J I 8	—.15	.03	.01	.07	.05	.15	*.21*	.11	—.10	.02	.15	.00	.01	.14	.04	.15

Maximum canonical $R_1 = .64$ $p < .05$

The relatively great emphasis we have elected to put on this relationship is revealed by our use of several sets of background data: bs E variables, which (together with bs K variables) were obtained from instrument B 13, where participants were asked to indicate their experience of different job areas; bs J I variables, which constitute a measure of observer-rated job experience on the basis of anamnestic data; and bg 4, which is an aggregate measure of breadth of job experience (obtained from the bs J I variables.

In respect of the bs E variables, our findings support the hypothesis for one of the four main training fields (personnel administration). Two sets of calculations have been made with reference to the bs J I variables:

1. Correlations of bs J I variables with attitude variables in three of the four fields: business organization, personnel administration and business economics. The findings support Hb 5 in business economics.
2. Correlations of bs J I variables with parallel attitude variables to ascertain how experience of one job area relates with attitudes to this and other job areas. The findings in this respect give support to the hypothesis.

Lastly, the correlations between bg 4 (breadth of job experience) and initial attitudes support the hypothesis in one of the four main training fields: personnel administration. Most of the single significant correlations in the whole body of data point in a positive direction.

Discussion

That the bs J I variables should correlate most strongly with initial attitude is presumably because this set was derived from more objective anamnestic data. It would be of great value if future research could develop more accurate measurements of this type.

If we look upon the correlations in table 20 we also see that on the whole there are positive correlations between job experience and initial attitudes in parallel attitude variables. When the teaching staff formulated training objective To 3 "To increase understanding of the company's different functions" they have had such a relationship in mind. And the training objective expresses an intention to make this relationship disappear.

But if we return to the bs E variables, we may perhaps find further support for the hypothesis by looking for correlational patterns in the same way we did for the corresponding knowledge variables.

INITIAL ATTITUDES COVARY WITH PRESENT JOB DUTIES OF PARTICIPANTS

Hypothesis Hb 6.

bs J II variables are presented together with the results.

PQ—PS variables are found in appendix.

Table 21. *Correlations between bs J II variables (present job duties) and PQ—PS variables.*
N = 140. Correlations ≥ .17 are significantly ≠ 0 at the 5 per cent level.

Business organization

	PQ 1	PQ 2	ΣPQ 3-10	PS 1	PS 2	PS 3	ΣPS 4-11	PS 12	PS 13	PS 14	PS 15	PS 16	PS 17	PS 18
bs J II 1 Analyses of company objectives.	.06	—.03	—.03	—.08	.03	.05	*.17*	.11	*—.21*	.07	.08	*.18*	.06	*.18*
bs J II 2 Work of coordinating resources.	*.17*	—.05	—.01	—.07	.07	.08	*.17*	.01	—.06	.14	.09	.15	.08	.15
bs J II 3 Work of formulating and applying written policies.	*.27*	.13	.01	.01	.05	.03	.05	.10	—.06	—.04	.00	*.21*	.13	.11
bs J II 4 Work with performance measurement and control.	.09	—.07	.10	.08	.09	.08	.12	—.03	.12	.02	—.01	.06	.01	.02

Personnel administration

	PQ 18	PQ 19	PQ 20	PQ 21	PQ 22	PS 19	PS 20	PS 21	PS 22	PS 23
bs J II 5 Personnel management.	.03	—.02	—.11	—.02	—.01	.04	.09	.03	.02	.04
bs J II 6 Internal information and communication.	.14	.05	.08	.08	.04	—.03	.06	.06	.09	.02
bs J II 7 Personnel administration.	.13	.05	.09	.13	.04	.14	.10	.11	*.20*	.13

Business economics

	PQ 23	PQ 24	PS 24	PS 25	PS 26	PS 27	PS 28	PS 29	PS 30	PS 31	PS 32	PS 33	PS 34	PS 35	PS 36	PS 37	PS 38
bs J II 8 Profitability analyses.	.07	.07	.10	.10	.07	.10	.08	—.16	—.16	—.02	—.01	.05	—.07	.06	.02	.00	.07
bs J II 9 Liquidity.	.13	—.04	*.31*	*.24*	.16	.08	.16	.04	—.12	.13	.07	*.20*	*.17*	—.05	.01	—.01	—.10
bs J II 10 Methods of costing.	.08	*.24*	.09	.13	.11	.07	.09	—.14	—.07	.04	—.04	.03	—.02	—.08	—.04	*—.17*	—.08

Scientific method in management

	PS 39	PS 40	PS 41	PS 42	PS 43
bs J II 11 Scientific method.	—.08	—.09	—.12	—.12	—.15

INITIAL ATTITUDES COVARY WITH REASONS FOR ATTENDING COURSE

Hypothesis Hb 7.

bg variables are given below. PQ—PS variables are found in appendix.

Table 22. *Correlations between bg 7—9 (reasons for attending course) and PQ—PS variables.* N = 140. Correlations ≥ .17 are significantly ≠ 0 at the 5 per cent level.

Business organization

	PQ 1	PQ 2	≥ PQ 3-10	PS 1	PS 2	PS 3	PS 12	PS 13	PS 14	PS 15	PS 16	PS 17	PS 18	≥ PS 4-11
bg 7 Attendance at course planned by company.	.03	.03	.10	.15	—.04	.05	—.15	—.07	—.02	—.10	—.11	—.08	—.15	—.04
bg 8 Attendance at course matter of "laissez-faire".	.04	—.03	—.09	—.07	—.13	—.04	—.05	—.15	—.06	.01	—.05	—.05	—.01	.01
bg 9 Attendance at course a planned step towards promotion.	—.09	.02	.03	*—.21*	.01	—.15	—.01	—.03	—.03	—.01	—.02	—.06	.02	.01

Personnel administration

	PQ 18	PQ 19	PQ 20	PQ 21	PQ 22	PS 19	PS 20	PS 21	PS 22	PS 23
bg 7 Attendance at course planned by company.	—.04	—.02	—.05	—.05	*.18*	—.01	—.01	—.07	—.07	—.04
bg 8 Attendance at course matter of "laissez-faire".	.00	.02	—.12	.08	—.12	.04	.03	—.02	.08	—.03
bg 9 Attendance at course a planned step towards promotion.	*—.20*	—.05	—.05	—.12	—.13	—.13	—.10	—.07	—.11	—.11

Business organization	Maximum canonical correlation	$R_1 = .51$ $p < .05$
Personnel administration	,,	$R_1 = .30$ $p > .05$
Business economics	,,	$R_1 = .46$ $p > .05$
Scientific method	,,	$R = .16$ $p > .05$

A measure of job duties (discharged by participants immediately preceding the course) was obtained by observer ratings of anamnestic data, indicating the extent to which different job duties covered in the course program should have relevance for the participants.

Our findings support the hypothesis in one of the four main training fields: business organization. Most of the single significant correlations in all the fields point in a positive direction.

Business economics

	PQ 23	PQ 24	PS 24	PS 25	PS 26	PS 27	PS 28	PS 29	PS 30	PS 31	PS 32	PS 33	PS 34	PS 35	PS 36	PS 37	PS 38
bg 7 Attendance at course planned by company.	.10	.07	.08	.06	.01	.01	—.01	—.01	—.06	—.02	—.02	—.12	—.06	.08	.11	.07	.10
bg 8 Attendance at course matter of "laissez-faire".	—.06	.05	—.06	—.05	—.04	—.11	—.04	.15	.15	.03	.00	.08	.09	—.07	—.01	—.08	—.03
bg 9 Attendance at course a planned step towards promotion.	—.11	—.04	.00	—.01	—.09	—.03	—.11	*.18*	*.23*	—.05	.02	—.02	—.10	—.02	—.04	—.03	.04

Scientific method in management

	PS 39	PS 40	PS 41	PS 42	PS 43
bg 7 Attendance at course planned by company.	—.14	—.05	*.19*	—.07	.02
bg 8 Attendance at course matter of "laissez-faire".	.11	—.06	—.11	.01	.06
bg 9 Attendance at course a planned step towards promotion.	.00	—.02	—.10	.08	—.11

	Maximum canonical correlation	
Business organization		$R_1 = .41$ $p > .05$
Personnel administration	„	$R_1 = .29$ $p > .05$
Business economics	„	$R_1 = .39$ $p > .05$
Scientific method	„	$R_1 = .33$ $p > .05$

Three indexes (bg 7—9) from instrument B 2 were taken to measure reasons for course attendance. This hypothesis was primarily formulated to determine the relationship between background and change. In none of the four main training fields do the findings support the hypothesis that personal reasons for attending the course covary with initial attitudes.

INITIAL ATTITUDES COVARY WITH POLICIES WITHIN THE PARTICIPANT'S ORGANIZATION AND HIS "PROXIMITY" TO THESE POLICIES

Hypothesis Hb 8.

To study this hypothesis we have made use of general (bg) and specific (bs) variables from the instrument B 5—B 11.

bg variables are presented below. bs variables are given together with the results. PQ—PS variables are found in appendix.

bg 5 Degree of general influence in own organization.

bg 6 Degree of positiveness in own organization's policies.

Table 23. *Correlations between bg 5—6 (general influence on and personal opinion of policies) and PQ-PS variables.* N = 140
Correlations ≥, 17 are significantly ≠ 0 at the 5 per cent level.

Business organization

	PQ 1	PQ 2	ΣPQ 3-10	PS 1	PS 2	PS 3	PS 12	PS 13	PS 14	PS 15	PS 16	PS 17	PS 18	ΣPS 4-11
bg 5	*—.21*	—.12	.08	—.07	—.08	—.13	—.15	—.15	—.09	—.06	*—.24*	*—.18*	*—.20*	—.15
bg 6	.20	.05	.10	—.14	—.02	—.09	.00	.10	—.05	.00	—.06	—.01	.03	—.02

Personnel administration

	PQ 18	PQ 19	PQ 20	PQ 21	PQ 22	PS 19	PS 20	PS 21	PS 22	PS 23
bg 5	—.04	—.08	—.13	—.01	—.09	—.10	*—.19*	—.10	—.10	—.08
bg 6	—.03	.11	—.12	—.03	.05	—.09	—.07	—.08	—.08	—.06

Business economics

	PQ 23	PQ 24	PS 24	PS 25	PS 26	PS 27	PS 28	PS 29
bg 5	—.15	.00	—.13	—.05	—.07	—.02	—.09	.00
bg 6	.10	.01	—.03	—.01	—*.20*	—.14	.10	*.20*

PS 30	PS 31	PS 32	PS33	PS 34	PS 35	PS 36	PS 37	PS 38
.10	—.08	—.10	—.05	—.14	.08	—.02	.05	.04
.12	—.04	.02	.00	—.05	—.10	—.03	—.05	—.02

Scientific method in management

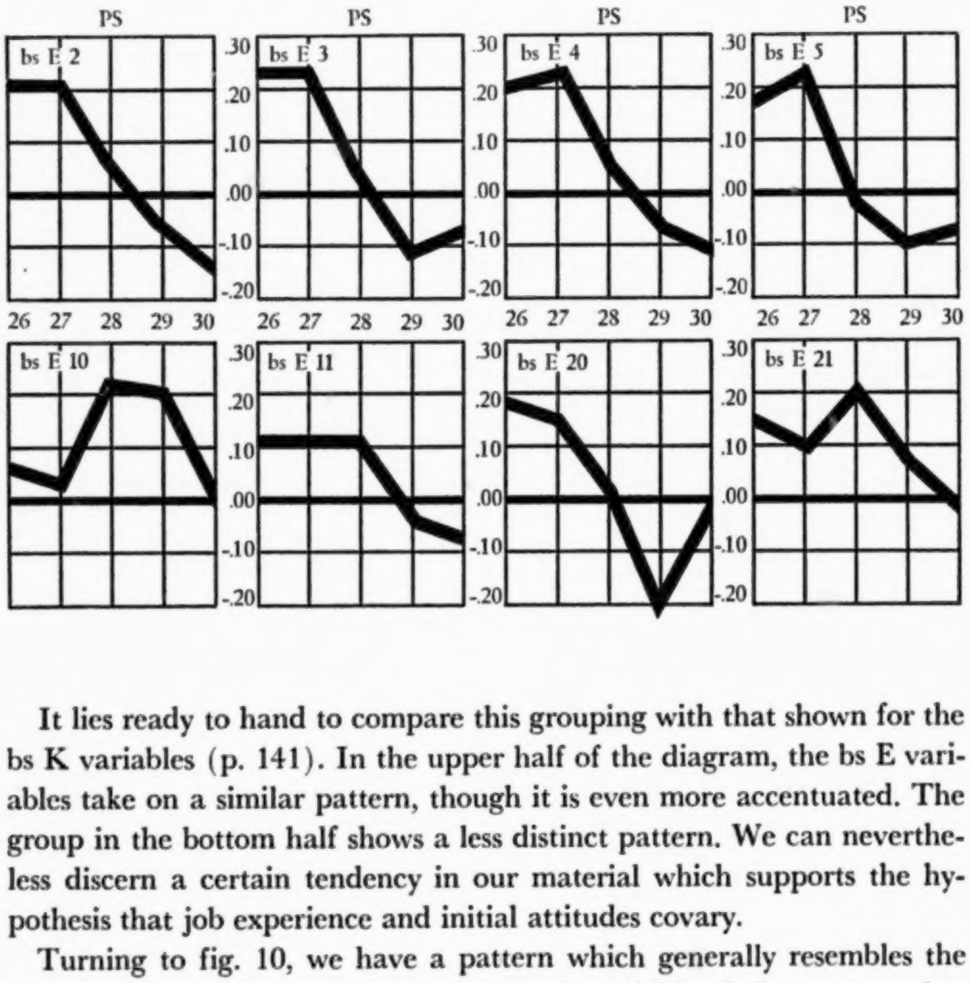
	PS 39	PS 40	PS 41	PS 42	PS 43
bg 5	—.11	—.11	—.05	—.07	—.16
bg 6	.00	.01	—.09	.03	.03

Business organization	Maximum canonical correlation	$R_1 = .44$ $p < .05$
Personnel administration	”	$R_1 = .27$ $p > .05$
Business economics	”	$R_1 = .40$ $p > .05$
Scientific method	”	$R_1 = .33$ $p > .05$

Our findings support the hypothesis in one of the four main training fields: business organization. On the other hand we cannot find any plausible, and meaningful explanation to this negative relationship.

Most of the significant correlations for the bs E variables also turn up in the field of business economics. We have also elected to look for meaningful patterns in two of the major topics in this field: a) liquidity (PS 26—30) and b) costing methods (PS 31—38). The compilations are set forth and described below.

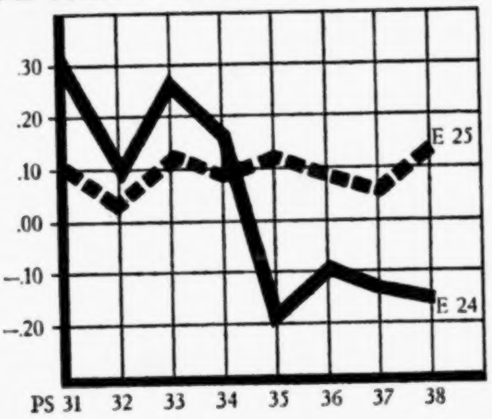
Fig 9. *Correlations between certain bs E variables and PS variables.*



It lies ready to hand to compare this grouping with that shown for the bs K variables (p. 141). In the upper half of the diagram, the bs E variables take on a similar pattern, though it is even more accentuated. The group in the bottom half shows a less distinct pattern. We can nevertheless discern a certain tendency in our material which supports the hypothesis that job experience and initial attitudes covary.

Turning to fig. 10, we have a pattern which generally resembles the one we obtained for the corresponding bs K variables. It is a pattern that also supports the hypothesis for this special topic area. (We should of course be aware that knowledge and experience variables are positively intercorrelated and that these two sets of variables are not independent of one another.)

Fig. 10. *Correlations between certain bs E variables and PS variables.*



Relationships between specific background variables (bs) from B 5—B 11 and PQ—PS variables related to corresponding areas.

To study the hypothesis in these respects we have made use of analyses of variance and multivariate analyses. The latter have been used when we have had groups of PQ- or PS variables logically related to each other.

For the reading of the results we are reminding of:

PQ variables range from 1—6 (where 1 expresses the most positive agreement to the item)

PS variables are transformed into a five point scale (where 5 expresses the most positive attitude towards the object in question)

Σ PQ 3—10 and Σ PS 4—11 range from 0—8 expressing the number of variabels above median of the total group.

B 5 a. Our company's policy in organizational matters

Group	Influence	Personal opinion	N
1.	above Md	above Md +	47
2.	above Md	below Md —	31
3.	below Md	above Md +	36
4.	below Md	below Md —	26
			140

Table 24. *Analyses of variance, B 5 a and certain PQ—PS variables relating to business organization.*

	1	2	3	4		
	M	M	M	M	F	F.05
PQ 1	2.40	2.32	3.17	2.27	*3.95*	2.68
PQ 2	2.30	2.26	2.83	2.04	*4.04*	2.68
ΣPQ 3—10	5.28	5.26	4.97	5.04	.24	2.68
PS 1	3.19	2.97	3.25	2.73	1.23	2.68
ΣPS 4—11	5.51	5.13	4.58	4.19	1.67	2.68

Table 25. *Multivariate analyses of variance, B 5 a and certain PQ—PS variables relating to business organization.*

	1 M	2 M	3 M	4 M	Pooled SD	χ^2	χ^2.05
PS 2	3.19	3.35	3.28	3.00	1.44	10.0	12.6
PS 3	3.34	3.06	2.92	2.88	1.13		
PS 12	3.17	3.06	2.67	3.08	1.05	7.6	12.6
PS 13	3.06	3.16	2.86	2.81	0.98		

B 5 b. Our company's policy in personnel matters

Group	Influence	Personal opinion	N
1.	above Md	above Md +	58
2.	above Md	below Md —	18
3.	below Md	above Md +	36
4.	below Md	below Md —	28
			140

Table 26. *Analyses of variance, B 5 b and certain PQ—PS variables relating to personnel administration.*

	1 M	2 M	3 M	4 M	F	F.05
PQ 18	2.14	1.94	2.39	2.32	1.08	2.68
PQ 19	1.79	1.78	2.06	1.89	1.02	
PQ 20	1.95	2.06	2.19	2.43	1.98	
PQ 21	2.05	1.94	2.25	2.14	.58	
PQ 22	1.97	2.06	2.25	2.14	.91	
PS 19	3.24	3.33	2.86	2.96	1.19	
PS 20	3.24	3.33	2.69	2.89	*2.83*	
PS 21	3.10	3.11	2.83	2.86	.79	
PS 22	3.12	3.17	2.78	3.00	.95	
PS 23	3.12	3.06	2.86	2.89	.59	

B 5 c. Our company's policy in economic matters

Group	Influence	Personal opinion	N
1.	above Md	above Md +	53
2.	above Md	below Md —	12
3.	below Md	above Md +	51
4.	below Md	below Md —	24
			140

Table 27. *Multivariate analyses of variance, B 5 c and certain PQ—PS variables relating to business economics.*

	1	2	3	4	Pooled		
	M	M	M	M	SD	χ^2	$\chi^2.05$
PQ 23	2.17	1.58	2.18	2.04	.98	10.3	12.6
PQ 24	2.98	3.08	2.80	2.38	1.16		
PS 24	3.45	3.67	3.02	2.79	1.45	9.1	12.6
PS 25	3.11	3.42	2.98	2.79	1.11		
PS 26	3.13	3.00	2.98	2.54	1.01	17.4	25.0
PS 27	3.19	3.00	3.00	2.79	1.16		
PS 28	3.19	4.00	2.86	3.04	1.32		
PS 29	2.92	3.08	3.04	3.04	1.04		
PS 30	2.89	2.75	3.12	3.04	1.01		
PS 31	3.26	2.92	2.96	2.92	1.21	14.4	36.4
PS 32	3.11	3.25	3.08	2.96	1.18		
PS 33	3.26	2.92	2.86	2.96	.99		
PS 34	3.21	3.25	2.86	2.83	1.16		
PS 35	2.98	3.42	3.14	3.04	1.18		
PS 36	3.11	3.08	3.04	3.00	1.09		
PS 37	3.02	3.00	3.02	2.96	1.21		
PS 38	3.02	3.25	3.08	2.92	1.27		

Notes to hypothesis-testing under B 5 a, b and c

Analysis of the general background variables, B 5 a, b and c, revealed only a few significant associations between these and separate PQ and PS variables. We therefore see no reason for rejecting the null hypothesis in the fields concerned (business organization, personnel administration and business economics).

B 6. Written policies

Group	Condition existing in own organization	Personal opinion	N
1.	Specifically worded for the most part	above Md +	26
2.	Specifically worded for the most part	below Md —	11
3.	Generally worded for the most part	above Md +	30
4.	Generally worded for the most part	below Md —	35
5.	Written policies lacking for the most part	above Md +	6
6.	Written policies lacking for the most part	below Md —	32
			140

Table 28. *Multivariate analyses of variance, B 6 and PS variables relating to "written policies".*

	1 M	2 M	3 M	4 M	5 M	6 M	Pooled SD	χ^2	$\chi^2.05$
PS 12	3.19	3.09	3.17	3.00	3.33	2.59	1.05	11.7	18.3
PS 13	2.92	3.09	3.17	3.06	2.33	2.88	.98		

The results of the analysis do not give us cause to reject the null hypothesis.

B 7. Performance control

Group	Condition existing in own organization	Personal opinion	N
1.	Systematically carried out	above Md +	30
2.	Systematically carried out	below Md —	14
3.	Not systematically carried out	above Md +	18
4.	Not systematically carried out	below Md —	78
			140

Table 29. *Multivariate analyses of variance, B 7 and certain PS variables relating to "Performance measurement and control".*

	1 M	2 M	3 M	4 M	Pooled SD	χ^2	$\chi^2.05$
PS 14	2.81	3.22	3.43	3.03	.99		
PS 15	3.00	3.11	3.14	3.10	1.13		
PS 16	2.99	2.72	3.14	3.40	1.03	*25.3*	25.0
PS 17	3.00	2.78	3.00	3.47	1.05		
PS 18	2.91	2.94	3.29	3.43	1.19		

The result of the analysis give us cause to reject the null hypothesis. In the same time, however, we find it difficult to find any meaningful explanations for the mean value differences between the subgroups. There is perhaps a tendency that groups 3 and 4, which represent unsystematically carried out performance measurement and control, account for more positive initial attitudes.

To say that this could give expression to the hypothesis that experience of and attitudes towards performance measurement and control are negatively related seems to us to be somewhat rash.

B 8. Recruitment and selection

Group	Condition existing in own organization	Personal opinion	N
1.	Systematically carried out	above Md +	60
2.	Systematically carried out	below Md —	21
3.	Not systematically carried out	above Md +	16
4.	Not systematically carried out	below Md —	43
			140

Table 30. *Analyses of variance, B 8 and certain PQ—PS variables relating to "recruitment and selection".*

	1	2	3	4		
	M	M	M	M	F	F.05
PQ 20	1.94	2.14	2.12	2.24	.35	2.68
PS 21	2.81	2.98	3.10	2.81	.63	2.68

The results do not warrant rejection of the null hypothesis.

B 9. Internal information and communication

Group	Condition existing in own organization	Personal opinion	N
1.	Systematic both in form and content	above Md +	51
2.	Systematic both in form and content	below Md —	21
3.	Unsystematic in one or both	above Md +	11
4.	Unsystematic in one or both	below Md —	57
			140

Table 31. *Analyses of variance, B 9 and certain PQ—PS variables relating to internal information and communication.*

	1	2	3	4		
	M	M	M	M	F	F.05
PQ 19	1.90	1.76	2.27	1.83	1.29	2.68
PS 20	3.16	2.91	2.55	3.09	1.21	2.68

The results do not warrant rejection of the null hypothesis.

B 10. Liquidity

Group	Condition existing in own organization	Personal opinion	N
1.	Liquidity adapted to company	above Md +	16
2.	Liquidity adapted to company	below Md —	49
3.	High liquidity	above Md +	20
4.	High liquidity	below Md —	22
5.	Not applicable		33
			140

Table 32. *Multivariate analyses of variance, B 10 and certain PS variables relating to liquidity.*

	1 M	2 M	3 M	4 M	5 M	Pooled SD	χ^2	$\chi^2.05$
PS 26	3.19	2.73	3.25	3.32	2.79	.99		
PS 27	3.19	2.61	3.70	3.50	2.88	1.02		
PS 28	3.00	3.06	3.70	3.00	2.97	1.36	*38.5*	31.4
PS 29	3.31	3.09	2.55	2.50	3.03	.94		
PS 30	3.13	3.33	2.45	2.64	2.97	.93		

The result of the analysis gives us cause to reject the null hypothesis. Accordingly, we hold hypothesis Hb 8 — Initial attitudes covary with policies within the participant's organization and his "proximity" to these policies — to be confirmed in respect of liquidity matters. The mean values for the subgroups suggest the existence of a positive relationship between conditions existing in own organization and initial attitudes to the corresponding field.

B 11. Costing methods

Group	Condition existing in own organization	Personal opinion	11:1*	11:2	11:3	11:4
1.	Absorption costing	above Md +	32	29	25	26
2.	Absorption costing	below Md —	27	23	15	18
3.	Direct costing	above Md +	26	22	25	20
4.	Direct costing	below Md —	8	15	12	9
7.	Not applicable	—	35	38	54	62
			128	127	131	135

Note. Two groups (absorption + direct costing) have been excluded because of their low frequencies.

* 11:1 In control
11:2 In pricing
11:3 In choice of product mix
11:4 In choice of production process

Table 33. *Multivariate analyses of variance, B 11: 1—4 and certain PS variables relating to costing methods.*

		1 M	2 M	3 M	4 M	7 M	Pooled SD	χ^2	$\chi^2.05$
B 11:1									
Attitude direct costing	**PS 31**	2.97	3.11	3.54	3.25	2.86	1.17		
	PS 32	3.06	3.00	3.38	3.13	2.97	1.15		
	PS 33	2.91	3.00	3.42	3.00	2.86	1.02		
	PS 34	3.13	3.04	3.04	3.38	2.94	1.16		
Attitude absorption costing	**PS 35**	3.66	3.44	2.15	2.50	3.14	.94	*67.4*	45.9
	PS 36	3.47	3.19	2.42	3.00	3.17	.99		
	PS 37	3.59	3.19	2.23	2.63	3.06	1.01		
	PS 38	3.59	3.33	2.27	2.68	3.17	1.05		
B 11:2									
Attitude direct costing	**PS 31**	2.93	3.13	3.91	3.00	2.82	1.15		
	PS 32	3.14	3.00	2.68	3.00	2.95	1.13		
	PS 33	3.10	2.91	3.64	3.13	2.82	.98		
	PS 34	2.97	2.83	4.00	2.93	2.66	1.01	*64.5*	45.9
Attitude absorption costing	**PS 35**	3.62	3.26	2.64	2.27	3.00	1.06		
	PS 36	3.41	3.09	2.82	2.67	3.00	1.04		
	PS 37	3.41	3.00	2.86	2.53	2.97	1.13		
	PS 38	3.48	3.48	2.68	2.27	2.89	1.12		
B 11:3									
Attitude direct costing	**PS 31**	3.16	2.93	3.84	3.17	2.74	1.05		
	PS 32	3.24	2.67	3.56	3.25	2.93	1.14		
	PS 33	3.16	2.87	3.48	3.08	2.91	.97		
	PS 34	3.00	3.00	3.36	2.83	2.89	1.18	*76.5*	45.9
Attitude absorption costing	**PS 35**	3.93	3.40	2.36	2.50	3.04	.97		
	PS 36	3.80	3.13	2.60	2.75	2.93	.93		
	PS 37	3.60	3.40	2.72	2.42	2.93	1.04		
	PS 38	3.96	3.20	2.48	2.42	2.96	1.02		
B 11:4									
Attitude direct costing	**PS 31**	2.96	2.89	4.05	3.11	2.82	1.06		
	PS 32	3.00	2.72	3.80	3.44	2.95	1.08		
	PS 33	2.92	2.72	3.55	3.11	2.95	.97		
	PS 34	2.88	3.00	3.45	2.78	2.94	1.16	*66.6*	45.9
Attitude absorption costing	**PS 35**	3.73	3.33	2.35	2.44	3.10	1.03		
	PS 36	3.62	3.28	2.65	2.44	2.98	1.01		
	PS 37	3.35	3.39	2.60	2.44	2.98	1.16		
	PS 38	3.54	3.33	2.55	2.33	3.03	1.18		

When interpreting these four analyses, we should bear their interconnections in mind. First of all, the same set of variable is employed for determination of initial attitudes (PS 31—38); and secondly, a covariation exists between the background variables (B 11:1—4). None the less, the results warrant our rejection of the null hypothesis, and hypothesis Hb 8 is held confirmed in respect of costing methods. The mean values in the subgroups suggest that a positive relationship obtains between condition in own organization and the corresponding initial attitudes. This relationship moreover, is more strongly marked for groups whose "personal opinion" lies above Md.

Discussion

The extra effort we went to in devising measuring instruments and methods of analysis to test and illuminate this hypothesis was particularly motivated. In the pilot study, where the participants interviewed were asked to state reasons for the answers they gave before and after training, so many of the reasons were related to conditions in their own organizations. The measures we have taken from the instrument are of both a general and specific nature. The significant associations we obtained would appear, especially if their interpretability is taken into account, to be concentrated first of all in specific topics within the main training fields.

This is scarcely surprising. As far as the specific, concrete areas are concerned, the participants are probably in a better position to judge how the policies of their own organization are formulated, and also to decide the acceptability of these policies for themselves.

Discussion of Hb 9 (See table 34)

The results thus give relatively strong support for the hypothesis that initial attitudes are related to interests. We also see these relationships as being largely positive.

If we compare the results under this hypothesis with those for knowledge and job experience, it turns out that the significant correlations under Hb 9 are generally higher in all four fields. On the other hand,

INITIAL ATTITUDES COVARY WITH INTERESTS

Hypothesis Hb 9.

bs I variables are presented together with the results.

PQ—PS variables are found in appendix.

Table 34. *Correlations between bs I variables (interests) and PQ—PS variables. N = 140.* Correlations ⩾ .17 are significantly ≠ 0 at the 5 per cent level.

Business organization

interest in	PQ 1	PQ 2	Σ PQ 3-10	PS 1	PS 2	PS 3	PS 12	PS 13	PS 14	PS 15	PS 16	PS 17	PS 18	Σ PS 4-11
bs I 1 On corporate organization in general.	.11	.06	—.13	*.20*	.04	.11	*.19*	.12	.13	.11	.05	.04	.04	*.19*
bs I 4 On research in corporate organization.	.02	—.01	—.06	*.18*	.08	.09	.10	.02	.04	—.02	—.03	—.02	.01	.10
bs I 7 On corporate aims and objectives	.14	—.05	.02	—.03	—.06	—.05	.08	—.03	—.02	.08	—.01	—.03	—.04	.03
bs I 8 On coordination of company resources	.00	—.07	.02	.16	*.26*	*.19*	.04	.03	*.21*	*.20*	*.17*	*.23*	*.22*	*.23*
bs I 9 On clarification and application of company policies	—.05	—.08	.04	.05	—.02	—.03	.14	.06	.03	.04	.05	—.03	—.03	—.07
bs I 10 On performance measurement and control of executives	.09	.15	—.06	.16	.14	*.29*	.10	*.19*	*.23*	*.29*	*.32*	*.29*	*.20*	*.18*
bs I 11 On written policies.	.06	—.11	—.08	.09	.02	.09	*.25*	*.27*	.07	.15	.14	.13	.09	.07

Personnel administration

interest in	PQ 18	PQ 19	PQ 20	PQ 21	PQ 22	PS 19	PS 20	PS 21	PS 22	PS 23
bs I 2 On personnel administration in general	.08	.03	.16	.16	.03	.11	.11	*.19*	.09	.16
bs I 5 On research in personnel administration	—.02	.08	.16	*.24*	*.21*	—.01	.05	.14	.15	.14
bs I 12 On internal information and communication	.02	*.19*	.15	.11	.07	.10	*.30*	.10	.14	.13
bs I 13 On groups and leadership	.03	—.04	.15	.06	—.03	*.20*	*.24*	.15	.15	*.19*
bs I 14 On motivation and productivity	—.11	*—.19*	.03	.02	.12	.13	.08	*.19*	.05	*.17*
bs I 15 On recruitment, selection, transvers and promotions	.13	.09	.15	.12	.15	*.17*	*.19*	*.23*	*.24*	*.26*
bs I 16 On labor turnover	.10	—.02	*.18*	*.17*	.11	.09	.15	*.29*	*.29*	*.20*

Business economics

interest in	PQ 23	PQ 24	PS 24	PS 25	PS 26	PS 27	PS 28	PS 29	PS 30	PS 31	PS 32	PS 33	PS 34	PS 35	PS 36	PS 37	PS 38
bs I 3 On business economics in general	*.24*	—.12	*.23*	*.23*	*.28*	*.17*	*.19*	.03	—.08	—.03	—.10	.07	—.03	.10	*.21*	*.30*	*.18*
bs I 6 On research in business economics	.13	—.08	.04	.04	.03	.05	.06	.09	—.04	—.04	—.08	.04	—.04	.01	.05	.00	.08
bs I 17 On profitability analyses	—.05	*—.20*	.14	.12	—.02	.03	.02	—.02	—.06	—.02	—.05	.15	—.02	—.01	.01	—.03	—.06
bs I 18 On marketing	*.19*	—.15	*.18*	.11	.09	*.22*	.05	—.12	.00	*.19*	.08	.04	*.20*	.05	.05	.08	—.02
bs I 19 On liquidity	.10	—.13	*.25*	*.26*	*.29*	*.19*	*.25*	.06	—.12	.06	.03	*.23*	—.02	.04	.14	.15	.06
bs I 20 On methods of costing	*.19*	—.09	*.33*	*.30*	.13	.12	*.19*	—.01	—.03	.16	.11	*.17*	*.20*	.15	*.19*	.12	.15
bs I 21 On financing	.03	—.13	*.19*	*.29*	*.19*	.04	.14	.16	.01	.04	.00	*.21*	—.04	.10	*.17*	*.17*	.07

Scientific method in management

interest in	PS 39	PS 40	PS 41	PS 42	PS 43
bs I 4 On research in business organization	.16	—.08	.01	.10	*.26*
bs I 5 On research in personnel administration	*.24*	—.01	.01	.14	*.33*
bs I 6 On research in business economics	.08	—.15	—.04	*.17*	.11

Business organization	Maximum canonical correlation	$R_1 = .50$ $p > .05$
Personnel administration	„	$R_1 = .51$ $p < .05$
Business economics	„	$R_1 = .55$ $p < .05$
Scientific method in management	„	$R_1 = .43$ $p < .05$

The measuring device adopted under this head was a four-point scale, on which participants were asked to indicate degree of interest in different areas related to the course content (B 12).

Our findings support the hypothesis in three of the four main training fields: personnel administration, business economics and scientific method in management. Most of the single significant correlations are positive.

no clear-cut correlational patterns emerge with groups of background and initial attitude variables.

Further, the interest variables are in part more generally formulated as compared with the knowledge and job-experience variables. Rather than completely ascribe these differences to the different character of the variables used, we are also inclined to see them to some extent as a result of this dissimilarity in the instrument design.

The findings of Chapter 10: a final comment

In this chapter we sought to test and exploratively illuminate main hypothesis I, "Initial attitudes and background variables covary", by way of a number of subhypotheses related to defined background areas.

The main hypothesis can naturally not be held verified in the sense that we have obtained significant correlations for each of these background areas. Nor was that reasonable to expect. This hypothesis was formulated to serve as a framework for our tests of the relationships between initial attitudes and background variables.

By the same token, the subhypotheses cannot be held generally verified, since we did not proceed on the assumption that we would consistently find significant associations there, either.

None the less, our findings disclose various associations and correlational patterns which make it justifiable to conclude that meaningful relationships between initial attitudes and background variables do exist in a number of essential background and attitude areas.

The foregoing account has pinpointed those background areas which have the strongest of the associations with initial attitude areas.

However, we do not wish to draw any special conclusions from our findings that the strength of the associations for any one background hypothesis varies according to the different fields of training (business organization, personnel administration, etc.).

Both the background variables and initial attitude variables may be reliable and valid in varying degree. When we elected to test and illuminate hypotheses in major areas, we at the same time accepted the necessity of having to work to a great extent with unsophisticated and defective measuring instruments. To draw certain far-reaching conclusions at this stage (for instance, that interests and initial attitudes correlate more highly in business economics than in other areas) would, in our opinion, be reading too much into the findings.

Chapter 11

RELATIONSHIP BETWEEN INITIAL ATTITUDES AND CHANGE

Our second main hypothesis reads: INITIAL ATTITUDES AND CHANGE COVARY.

Before describing the statistical analyses carried out to test this hypothesis, we should like to relate to the methodological discussion of this problem set forth in Chapter 4.

1. A study of the relationship between initial scores and change usually results in negative correlations.
2. Considerable difficulties arise in trying to explain these correlations causally.

A somewhat naive intrepretation of such negative correlations would be to say that low-scorers change more than the high-scorers, thus reducing the gap between these two groups.

As we observed in Chapter 4, a great many researchers have demonstrated the weaknesses of such a conclusion. We know that the correlation between initial score and change contains a spurious, negative element, in that errors in the former are included in both quantities being combined, but with reverse signs.

Dressel & Mayhew (see p. 60) have advanced the following to explain the negative correlations:

1. A ceiling effect.
2. A regression effect.
3. A focus of instruction effect.
4. Familiarity or unfamiliarity with terminology and concepts.
5. Differential motivation.

One purpose of investigating the relationship between initial standing and attitude change in our study was to see whether we, too, would obtain negative correlations. If so, it would be risky to analyze the relationships between background factors and change without in some way holding constant the effect of initial standing.

We have accordingly not been concerned to delve into the reasons for any negative correlations that might arise.

Analysis and findings

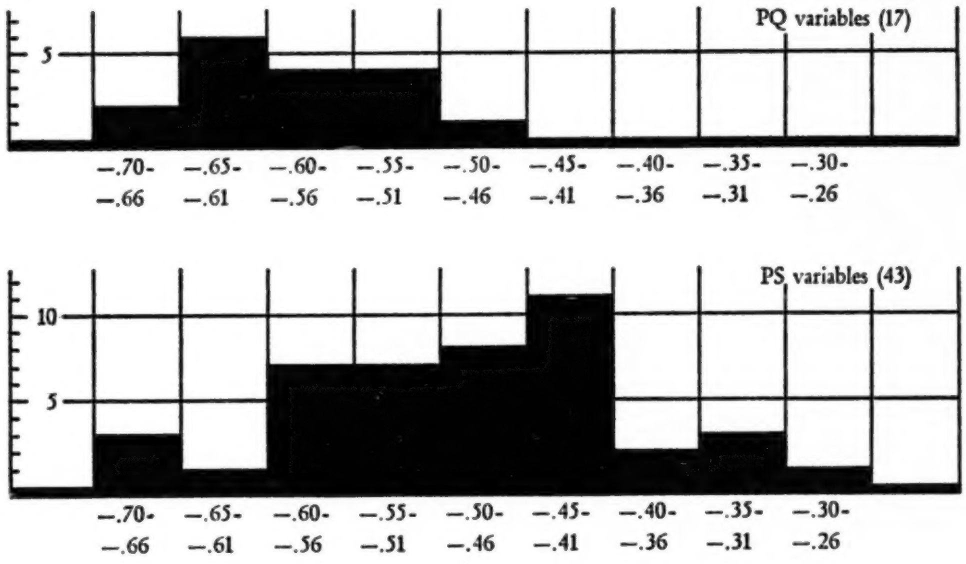
Product moment correlations were computed to measure initial standing and change for 60 attitude variables (17 PQ variables and 43 PS variables). The findings are in full accord with expectations: negative correlations were consistently obtained. Since it is not our purpose to interpret the reasons for these correlations, we content ourselves with setting forth their distributions in the form of a histogram, Fig. 11.

It will be noted from the distributions that the negative correlations are more pronounced for the PQ variables. Two explanations are plausible here: the ceiling effects are greater for these variables, taking into account that they admit of only six alternative responses; and, presumably, the PQ variables have lower reliability, leading to a higher incidence of regression effects. The choice of PQ variables may have contributed to overrepresentation of unreliable PQ variables in the data (cf. pp. 92).

Negative relationships are obtained between measures of initial attitudes and change.

It follows from these findings that we should not study the relationship between background factors and change unless initial standing is taken into account. Our data do not permit the use of any more sophisticated technique in trying to hold the effect of initial standing constant. We have had to make do with a roug breakdown of the data, such that for every measure of the background-change relation we have classified the data with reference to high and low initial standing. The starting point for this breakdown has been the median in each frequency distribution of initial attitudes.

Fig. 11. *Relationship between initial attitudes and change. Distribution of correlation coefficients.*



Chapter 12

RELATIONSHIPS BETWEEN CHANGE AND BACKGROUND

In this chapter we shall primarily present and discuss findings related to main hypothesis III: CHANGE AND BACKGROUND VARIABLES COVARY.

Recapitulation of technical problems in measuring change

If the analysis of findings thus far can be said to have entailed difficult problems of methodology and statistics, these difficulties were light as compared with those which entered into the analyses under the present chapter heading. Reference is made to Chapter 4, where we devoted a special section to the "Technical problems in measuring psychological change". Anyone who has worked with the complex of problems involved in the measurement of psychological change will understand why we have had to accept our inability to avoid methodological and statistical weaknesses. Had we done otherwise, any attempt to analyze the findings could have been given up before we started. Given these limiting conditions, it follows that we cannot expect too much in the way of clear, determinate patterns from our analyses in terms of hypothesis-testing. We shall have to content ourselves with an explorative illumination, which in turn may help towards the formulation of hypotheses for future research.

In Chapter 4 we took up three main problems in connection with change:

1. The reliability-validity problems.
2. The relationship between initial attitudes and change.
3. Weaknesses in the one-group pretest-posttest design.

1. THE RELIABILITY-VALIDITY PROBLEMS

"Undoubtedly the best-know 'fact' about change scores is that they are unreliable" (Bereiter in Harris 1962, p. 9).

We can assume that the unreliability of change scores stem in part from unreliability of the pretests and posttests which yield the change scores, and in part from the positive correlation between these scores.

It has not been possible to determine pretest-posttest reliability for single questions in the Questionnaire (PQ variables). To determine the reliability of the Semantic Differential scales (PS variables), we selected six PS variables and tested their internal consistency.

The reliability coefficients thus obtained ranged from .81 to .96 (N = 62). We concluded from these results that the Semantic Differential scales ought to show satisfactory reliability on the whole. As to the correlations between pretests and posttests, together with their interpretation, reference is made to a separate presentation later in this Chapter.

Bereiter (op.cit., pp. 4—5) has summed up the unreliability-invalidity dilemma in two sentences: "The higher the correlation between pretest and post-test, the lower the reliability of the difference scores", and "The lower the correlation between the two tests, the less they can be said to measure the same thing." Thus if we have relatively low correlation between pretest and posttest, we could not, on the basis of observed change, decide whether it derives from changes in the course participants or in the test.

The problem at issue here has exceptionally great importance for our study, since we have been concerned throughout with the relationships of background variables to initial attitudes and change.

In order to impart this focus to the study, we must in any case make provisions that will enable us to view our change scores as indicative of changes in the participants.

The single questions which make up the Questionnaire did not lend themselves to a check of their structural reliability as between the two measuring occasions. On the other hand, we were able to perform such a check for the Semantic Differential scales (PS variables). The results of these analyses, reported on in Chapter 8, do not indicate that any structural change took place. We interpret this to mean that observed change, naturally with allowance made for defective reliability in the change scores, expresses changes in the participants.

2. RELATIONSHIPS BETWEEN INITIAL ATTITUDES AND CHANGE

Negative correlations between these two measures are a common occurrence. Various explanations for them were offered in Chapter 4, where we also emphasized that studies of the relationship between change and external variables, when used as background variables, should attempt to make such correlations partializing initial attitudes if initial attitudes and change correlate negatively. In Chapter 11 we studied the connection between initial attitudes and change in our data.

The findings were determinate and produced the expected negative correlations. From this we concluded that we ought in some way to try studying the relationship between background and change partializing initial attitudes. It was not possible for us to apply a sophisticated method for this purpose. We have had to make do with calculating the correlations from data that were split up with reference to initial attitudes. For every attitude variable we accordingly effected a breakdown into two groups: one initially high (I+) and one initially low (I—). The breakdown was made as close as possible to the median.

3. WEAKNESSES IN THE ONE-GROUP PRETEST-POSTTEST DESIGN (OXO)

In Chapter 4 (pp. 62—63) we described the general weaknesses of the OXO design with reference to Campbell & Stanley (1963, pp. 177—182). It was pointed out that these weaknesses will vary considerably from case to case and that it can be assessed to some degree in the individual experiment.

We will now discuss the weaknesses of the design when applicated on our own study and according to Campbell & Stanley analyze how extraneous variables can offer plausible hypotheses explaining an 0_1—0_2 difference rival to the hypothesis that X caused the difference.

History. "Between 0_1 and 0_2 many other change-producing events may have occured in addition to the experimenter's X. If the pretest (0_1) and the posttest (0_2) are made on different days, then the events in between may have caused the difference. To become a *plausible* rival hypothesis, such an event should have occured to most of the students in the group under study, say in some other class period or via a widely disseminated news story." (op. cit. p. 177).

As a matter of course the pretests and posttests in our study were carried out on different days; actually, there are about four months in between. However, the study also embraces participants in five courses which were completed in the period from May 1964 to November 1965. The latter fact makes it unlikely that an event in between "should have occurred to most of the students in the group under study".

Given this background, we feel we can pay less regard to the jeopardizing effect of *history* on internal validity in our study.

Maturation. "This term is used here to cover all those biological or psychological processes which systematically vary with the passage of time, independent of specific external events." (op. cit. p. 177—178)

In our study, with measuring attitudes of grown up people, we think we can neglect eventual effects of maturation.

Testing. Testing in the present context refers to the effect of the pretest itself. Campbell & Stanley cite various examples of similar effects. In attitude measurement these seem to go together with factors such as social desirability, anonymity, and disguised purpose of the test.

While testing effects cannot be overlooked in our case, there are several indications to suggest that they need not be so inimical. The time lapse between both measuring dates is as long as about four months, which according to the participants themselves was adequate enough to abolish recall. The attitude areas for which measurements were carried out have scarcely been of the kind to render delicate the question of social desirability. Special measures were taken to safeguard anonymity. For one of the two measuring instruments, the Semantic Differential scales, the disguised purpose of the test might give rise to testing effects in the sense that the participants were subjected at pretest for the first time to such a testing situation. However, that is not likely in view of the high agreement often found between results from the Semantic Differential scales and corresponding items from the other and more conventionally designed measuring instrument, the Questionnaire.

Instrumentation. The research of recent years has increasingly called attention to a perplexing problem, namely that changes in measuring instruments may produce 0_1—0_2 differences. In respect of our Semantic Differential scales we have performed analyses (see Chapter 8) to compare their structure at pretest and posttest. Our findings do not indicate any difference as between the two measuring dates. Since similar analyses could not be performed for the Questionnaire, we cannot dismiss the operation of possible instrumentation effects for this instrument.

Statistical regression. Differences caused by statistical regression would hardly seem to be relevant in our case, since we have not worked with comparisons of subgroups chosen on the basis of extreme initial scores. For the purposes of our study, it should follow from the foregoing discussion that we can fairly well limit those weaknesses of the OXO design which Campbell & Stanley generally ascribe to it.

But when the OXO design is used with the help of mean value differences between 0_1 and 0_2, other serious risks of misinterpreting the results will be incurred. On the other hand, these risks apply in equal degree to more advanced designs where use is made of, say, a control group procedure.

If a researcher obtains significant mean value differences, the very method of working with mean value comparisons may beguile him into seeing the experimental group as a whole which moves along a scale. By the same token he may be misled into viewing zero differences as the absence of change within the experimental group. This way of looking at the matter was criticized by us in Chapter 3, where we also motivated our decision to focus more of our attention on how background variables covary with initial attitudes and change than on mean value comparisons between the scores achieved by the experimental group at pretest and posttest.

If the researcher obtains significant mean value differences, these may stem from change within a subgroup of the experimental group. But if he does not obtain such differences, the apparent absence of change may have occurred because individuals and subgroups have changed in different directions, with a net result of zero in the mean value differences.

For both the significant and non-significant mean value differences in our data, the correlations between pretest and posttest are of such limited magnitudes that both these situations could exist.

But if the low positive correlations are to be thus interpretable, and if individual change scores are going to help us study the relationship between them and background data, we shall have to make additional assumptions.

We must assume that change scores are relevant in the sense that they have come from instruments which are not structurally dissimilar for the two measuring dates. In our view, support for this assumption has been found in the Semantic Differential scales. A corresponding analysis was not possible for the Questionnaire. However, the general agreement between the results from both instruments suggests that the assumptions also holds true for the Questionnaire.

Further, we must assume that the low correlations do not follow from low reliability in the before-and-after measurements. We believe that this is not the case in light of the support found for the Semantic Differential scales. It was not possible to carry out a reliability determination for the PQ variables.

Plan and method of statistical analysis

In order to shed light on change and its relationship with background factors, we have performed a number of analyses. These can be arrayed under four heads as follows:

1. Mean values and standard deviations were computed for all attitude variables (PQ and PS variables) at pretest and posttest. This has permitted us to compare the findings from both measuring occasions.
2. Product moment correlations between pretest and postest were computed for all attitude variables.

   The resulting information helps us in two ways: first, it clarifies the unreliability-invalidity dilemma discussed earlier; and second, when combined with the information yielded under item 1, it permits an interesting general illumination of the change problem. Should it turn out that we would not obtain a mean-value difference for an attitude variable and at the same time observe very high positive correlations between pretest and posttest for all attitude variables, there would scarcely be reason to assume that change has occurred at all.

3. In the analysis of findings to establish the relationship between background and change, we have followed the corresponding analysis plans for determining relationships between initial attitudes and background (Chapter 10). However, an important supplement to the foregoing is made up of the breakdown of data with reference to initial attitudes, as mentioned above. Accordingly, the analyses were carried out in two groups, the one pertaining to initially high values (I+) and the other to lower initial values (I—). For all background variables except those obtained from measuring instrument B 5—B 11 ("proximity" to policies of own organization), χ^2 analyses of dichotomized data were carried out in conformity with the tabulation shown below. χ^2 values are signed in order to indicate the direction of the association. A negative χ^2 indicates a negative association.

Initial attitudes above Md

	background variables +	background variables —
change +		
change —		

Initial attitudes below Md

	background variables +	background variables —
change +		
change —		

To explore the connection between background variables within B 5—B 11 and change, comparisons between change proportions for different subgroups relating to the B 5—B 11 variables were studied by means of χ^2 analysis. In cases where the subgroup N fell below 10, we elected not to have the subgroups concerned enter into these comparisons.

A special analysis was made for training objective To 3, "To increase understanding of the importance of the company's different functions".

Here we compared the correlations of pretests and posttests relating to job experiences and attitudes to different functions within an organization.

Change in terms of mean value shifts

We have studied management training under four main headings of subject matter: business organization, personnel administration, business economics and scientific method in management. A set of 12 training objectives was formulated for these main areas. In presenting our data, we have itemized under each heading the PQ and PS variables, their mean values, and their standard deviations. Product moment correlations between pretest and posttest are also given. The mean value differences for pretest-posttest have been tested for significance, and the resulting t values are given in the tables. Where mean value differences are significant at the 5-percent level, the t values are in *italics*.

The fact that we have carried out significance tests does not mean that our discussion of findings will be confined to what is significant and what is not. There are several reasons which militate against such a procedure.

The two measuring instruments (Questionnaire and Semantic Differential scales) are structured so that the items under each training objective will enable us to make meaningful analyses of trends to a relatively great extent.

Further, the scales present a technical problem. In regard to both the PQ and PS variables, the distributions at pretest and posttest show that the participant group has generally made no more than limited use of the theoretical stimuli scales.

In consequences of these shifts, which for some of the variables are highly pronounced, the extreme values cluster at one end of the scale for each variable. In addition, the shifts generally point in the same direction as the established training objectives. Accordingly, we have to make allowance for perceptible ceiling effects, which will pose difficulties when some of the variables are to be seen as a result of training in terms of mean value differences between pretest and posttest. Or to put the matter more simply: if we get a very high mean value for a variable already at pretest, the scale as constructed will leave very little scope for obtaining an even higher value at posttest which registers change. When the ceiling effect is taken together with defective reliability, an even lower mean value may result at posttest, even though the experimental group has not changed in a direction which would be reflected in a *lower* mean value.

In the light of the foregoing, and in view of the explorative character of this analysis, we have elected to look under each training objective for tendencies which can explain training results as expressed in mean value differences between pretest and posttest in relation to established training objectives. By pursuing an analysis along these lines, we think that we shall arrive at a more meaningful description of the results than by concentrating on finding out whether the individual differences are significant or not.

Training objective (To 1). To increase understanding of the importance of having a company explain corporate aims to itself and to its employees

PQ 1. All too often, unfortunately, management has not made clear corporate objectives to itself and to higher executives. (strongly agree = 1 p)

PS 1. Explaining corporate objectives to higher executives. (a high mark = positive attitude)

Pretest		Posttest			
M	SD	M	SD	r	t
2.56	1.28	2.39	1.17	.43	1.53

Pretest		Prosttest			
M	SD	M	SD	r	t
43.46	5.86	43.09	7.07	.42	0.62

For both PQ 1 and PS 1, the mean value at pretest expresses the participant group's positive initial attitude (average attitude) in line with the training objective. The differences between pretest and posttest go in opposite directions for PQ 1 and PS 1. Bearing positive ceiling effects in mind, we can in any event note that the initial positive attitude persists to the end of training.

Training objective (To 2). To increase understanding of the importance of having a company coordinate its resources

PQ 2. Functional heads often find it difficult to subordinate their functional interests to the companys overall objectives.

PS 2. Coordinating the company's resources

PS 3. Getting functional heads to cooperate.

Pretest		Posttest			
M	SD	M	SD	r	t
2.38	0.99	2.55	0.93	.19	1.65

Pretest		Posttest			
M	SD	M	SD	r	t
45.34	3.25	45.31	3.37	.38	0.10
44.14	3.50	43.57	4.10	.56	1.87

Here again the experimental group exhibits high initial mean values in line with the training objective. The tendency toward declining mean values at posttest can probably be attributed to ceiling effects. We again observe that the positive initial attitude persists to the end of training.

Training objective (To 3). To increase understanding of the importance of the company's different functions

	Pretest		Posttest			
	M	SD	M	SD	r	t
PQ 3. Production is often accorded too much importance in relation to other activities in the company.	3.50	1.20	3.25	1.14	.38	*2.27*
PQ 4. Purchasing is often accorded too much importance in relation to other activities in the company.	3.94	1.11	4.04	1.00	.40	1.02
PQ 5. Selling is often accorded too much importance in relation to other activities in the company.	3.82	1.25	4.06	1.09	.44	*2.28*
PQ 6. Finance is often accorded too much importance in relation to other activities in the company.	4.22	1.06	4.24	1.02	.28	0.19
PQ 7. Accounting is often accorded too much importance in relation to other activities in the company.	3.82	1.28	3.62	1.25	.49	1.85
PQ 8. Administration is often accorded too much importance in relation to other activities in the company.	4.42	1.01	4.40	0.99	.33	0.20
PQ 9. Personnel administration is often accorded to much importance in relation to other activities in the company.	4.37	1.15	4.36	0.97	.38	0.10
PQ 10. Top management is often accorded too much importance in relation to other activities in the company.	4.53	1.09	4.46	1.03	.32	0.64

	Pretest		Posttest			
	M	SD	M	SD	r	t
PS 4. Production	42.87	4.89	42.66	4.98	.60	0.56
PS 5. Purchasing	40.86	5.91	40.99	5.56	.66	0.32
PS 6. Selling	44.14	4.48	44.09	4.30	.66	0.12
PS 7. Finance	42.99	4.67	43.27	4.51	.54	0.75
PS 8. Accounting	41.14	5.28	40.27	6.00	.64	*2.13*
PS 9. Administration	44.60	3.78	44.47	4.03	.57	0.42
PS 10. Personnel administration	42.15	4.86	42.27	5.04	.61	0.32
PS 11. Top management	45.15	3.98	45.30	3.78	.59	0.50

Mean value differences between pretest and posttest under this objective are actually irrelevant, since the objective does not purport to make participants more favorably disposed toward different functions in their organizations as a result of training. Rather, the objective as formulated assumes that participants are much too inclined, by virtue of their attachment to a specific function in their jobs, to elevate its importance at the expense of other functions. A course is supposed to change the attitudes of participants by making them sympathetic to functions other than their own. Just how well the training succeeds in this respect is beyond the capacity of a mean value difference to reveal. Even so, it may be of interest to comment on the results as an explanation and comparison of the status of individual functions at pretest and posttest.

If we rank-order the mean values of different functions within the PQ and PS variables, we find strong agreement at pretest and posttest ($R_{\text{pretest - posttest PQ}} = .96$, $R_{\text{pretest - posttest PS}} = .98$). The rank correlations between PQ and PS variables at pretest and posttest are much weaker ($R = .56$ and $R = .71$). For both pretest and posttest, the PQ and PS variables (ranges I—IV) which were consistently rated most favorably relate to the more overlapping functions: Top management (PQ 10 and PS 11), Administration (PQ 8 and PS 9) and Finance (PQ 6 and PS 7), in the order named. Similary, Production (PQ 3 and PS 4), Purchasing (PQ 4 and PS 5) and Accounting (PQ 7 and PS 8) have consistently received mean values in the bottom half.

Training objective (To 4). To increase understanding of the importance of having a company clarify and apply its policies

	Pretest		Posttest			
	M	SD	M	SD	r	t
PQ 11. A company should have written guidelines in detail of company policy for its executives.	4.14	1.47	4.33	1.34	.50	1.59
PQ 12. A company should have written guidelines in general of company policy for its executives	2.02	1.14	1.80	0.90	.29	*2.11*

	Pretest		Posttest			
	M	SD	M	SD	r	t
PS 12. Written guidelines in detail of company policy for executives.	33.04	9.31	32.05	9.49	.50	1.25
PS 13. Written guidelines in general of company policy for executives.	39.29	7.03	40.29	6.45	.40	1.60

Results from both the PQ and PS variables indicate that the participants as a group are more positive toward generally worded guidelines of company policy (PQ 11 and PS 12) than toward guidelines worded in detail (PQ 12 and PS 13). This difference seems to be reinforced during the course of training. The mean values obtained at posttest for PQ 11 and PS 12 express a less positive attitude toward detailed guidelines of company policy, whereas the opposite holds for generally worded guidelines (PQ 12 and PS 13). This finding fully accords with the intentions of program directors: although they want to increase understanding of the importance of having a company clarify and apply its policies, they also want to advise against making too explicit the pattern which governs an executive's working situation.

Training objective (To 5). To increase understanding of the importance of performance controls

	Pretest		Posttest			
	M	SD	M	SD	r	t
PQ 13. A company should have systematic performance measurement and control of lower-level employees.	2.36	1.01	2.42	1.07	.39	0.62
PQ 14. A company should have systematic performance measurement and control of foremen.	2.47	1.01	2.49	0.96	.47	0.23
PQ 15. A company should have systematic performance measurement and control of department heads.	2.69	1.25	2.46	1.18	.57	0.52
PQ 16. A company should have systematic performance measurement and control of vice presidents.	2.87	1.38	2.85	1.30	.56	0.19
PQ 17. A company should have systematic performance measurement and control of presidents.	3.24	1.64	3.23	1.50	.56	0.10

	Pretest		Posttest			
	M	SD	M	SD	r	t
PS 14. Performance measurement and control — lower-level employees.	38.87	6.23	38.56	6.69	.53	0.58
PS 15. Performance measurement and control — foremen.	39.34	6.28	38.52	6.29	.55	1.63
PS 16. Performance measurement and control — department heads.	40.06	6.65	39.55	7.07	.68	1.09
PS 17. Performance measurement and control — vice presidents.	40.11	7.03	39.37	7.26	.60	1.37
PS 18. Performance measurement and control — presidents	38.89	8.82	38.61	9.26	.50	0.37

In formulating the PQ and PS variables under training objective 5, we assumed that participants would initially show a clearly positive attitude toward performance measurement and control of lower-level employees, and that this positivity would taper off the higher up one moved in the hierarchy.

The pretest findings for PQ 13—17 fully accord with this assumption, but the same trend does not emerge from the corresponding PS variables. Training objective 5 also seeks to make participants more favorably disposed toward performance measurement and control of higher jobholders. The mean value differences we can establish between pretest and posttest scores do not support a conclusion that an average change in accordance with the objective has been achieved.

Training objective (To 6). To increase understanding of the importance of personnel management questions

	Pretest		Posttest			
	M	SD	M	SD	r	t
PQ 18. Executives should take greater interest in their direct personnel management duties.	2.21	0.97	2.49	1.09	.33	*2.77*

	Pretest		Posttest			
	M	SD	M	SD	r	t
PS 19. Managing personnel.	44.35	3.87	43.99	4.01	.48	1.06

The results indicate that the participant group has great initial understanding of the importance of personnel management questions. Posttest scores point to a decline of positive attitude, though it is still strongly held on the average.

Training objective (To 7). To increase understanding of the importance of internal information and communication

	Pretest		Posttest			
	M	SD	M	SD	r	t
PQ 19. Companies should take greater interest in internal information and communication.	1.88	0.75	1.86	0.82	.36	0.27

	Pretest		Posttest			
	M	SD	M	SD	r	t
PS 20. Internal information and communication.	42.66	4.39	42.62	4.28	.49	0.11

Initially, the pretest results, especially for PQ 19, indicate a highly positive attitude in line with the training objective. It may be concluded from the posttest scores that this attitude is retained throughout training.

Training objective (To 8). To increase understanding of the importance of personnel administration techniques

	Pretest		Posttest			
	M	SD	M	SD	r	t
PQ 20. Companies should take greater interest in recruitment and selection.	2.12	0.89	2.00	0.79	.45	1.60
PQ 21. Companies should take greater interest in the induction of new hires.	2.11	0.90	2.03	0.86	.52	1.10
PQ 22. Companies should take greater interest in the training of personnel.	2.09	0.84	1.94	0.75	.40	*2.03*

	Pretest		Posttest			
	M	SD	M	SD	r	t
PS 21. Recruitment and selection.	42.44	4.52	42.24	4.85	.55	0.53
PS 22. Induction of new hires.	40.64	5.30	41.42	4.72	.59	*2.02*
PS 23. Training of personnel.	42.41	4.69	42.76	4.25	.58	1.01

Average attitude to the importance of personnel administration techniques is shown to be distinctly positive by the pretest findings. Posttest scores express a tendency to reinforce this attitude. Five out of six mean value differences point in the same direction, and two of them are significant at the 5-per cent level.

Training objective (To 9). To make participants more critical of source data used in profitability analyses

	Pretest		Posttest			
	M	SD	M	SD	r	t
PQ 23. Companies should systemize their profitability analyses to a greater extent than they are now doing.	2.10	0.99	1.95	0.80	.39	1.77
PQ 24. The data included in profitability analyses are usually defective.	2.82	1.09	2.76	1.22	.38	0.55

	Pretest		Posttest			
	M	SD	M	SD	r	t
PS 24. Profitability analyses.	44.59	3.95	43.96	4.05	.59	*2.06*
PS 25. Data included in profitability analyses	42.01	5.17	41.44	5.05	.63	1.53

Here the PQ and PS variables change in opposite directions between pretest and posttest. It can be noted that the correlations between respective PQ and PS variables are low:

PQ 23—PS 24 r = .34
PQ 24—PS 25 r =—.01

In terms of content, there should be higher validity for the PQ variable, especially in respect of the last pair. The significant difference for PS 24 may be attributed at least in part to ceiling effect.

Training objective (To 10). To increase understanding of the importance of adapting liquidity to general company policy

	Pretest		Posttest			
	M	SD	M	SD	r	t
PQ 25. A Company should in every situation demand very high liquidity.	4.24	1.18	4.56	1.16	.55	*3.41*
PQ 26. A company should demand high liquidity as a matter of principle.	2.69	1.38	3.05	1.39	.46	*2.96*
PQ 27. A company should adapt liquidity to its company policy.	1.54	0.76	1.62	0.83	.29	1.00
PQ 28. A company should not look upon liquidity as something intrinsically desirable.	2.88	1.57	2.80	1.56	.36	0.53
PQ 29. A company should consistently maintaine low liquidity.	5.14	1.00	5.21	0.95	.57	0.91

	Pretest		Posttest			
	M	SD	M	SD	r	t
PS 26. Very high liquidity in every situation.	33.55	8.83	29.44	10.11	.49	*5.05*
PS 27. High liquidity as a matter of principle.	38.85	8.69	36.65	8.29	.41	*2.82*
PS 28. Liquidity adapted to company policy.	43.36	5.02	42.24	6.29	.41	*2.13*
PS 29. High liquidity not intrinsically desirable.	26.52	10.88	27.29	9.79	.46	0.85
PS 30. Consistent maintenance of low liquidity.	19.45	8.21	19.10	8.36	.51	0.50

The pattern for both PQ and PS variables is uniform at pretest, expressing a strongly positive attitude to having liquidity adapted to general company policy (PQ 27 and PS 28), while attitudes to high and low liquidity as matters of principle are less positive. A similar pattern emerges at posttest.

It should be noted here, however, that the positive attitude toward high liquidity has been further reduced, which fully accords with the training objective. That a significant reduction has also been obtained for PS 28 is difficult to explain rationally. Perhaps this datum (as well as PQ 27) may have been experienced initially as self-evident, which would explain why we have obtained mean values which express such a strong positive attitude. By the time of posttest the participants have behind them thoroughgoing discussions, in which they have been made aware of the different opinions existing on this subject. In consequence, some participants who formerly thought superficially about the matter as so much "of course" have acquired a deeper insight. Nor need this change result solely in extremely positive responses. It should be pointed out at the same time that attitude to company-adapted liquidity is still highly positive at posttest. To this speculative interpretation may be added the possible operation of ceiling effect.

Training objective (To 11). To increase understanding of the importance of adapting methods of costing to particular situations

	Pretest		Posttest			
	M	SD	M	SD	r	t
PQ 30. Direct costing is generally very useful in choice of product mix.	2.42	1.06	2.08	1.01	.32	*3.33*
PQ. 31. Direct costing is generally very useful in choice of production process.	2.86	1.21	2.54	1.15	.26	*2.64*
PQ 32. Direct costing is generally very useful in control.	2.76	1.17	2.64	1.24	.37	1.05
PQ 33. Direct costing is generally very useful in pricing.	2.80	1.33	2.61	1.32	.33	1.47
PQ 34. Absorption costing is generally very useful in choice of product mix.	2.86	1.33	3.71	1.28	.30	*6.51*
PQ 35. Absorption costing is generally very useful in choice of production process.	2.56	1.19	3.51	1.25	.30	*7.78*
PQ 36. Absorption costing is generally very useful in control.	2.81	1.36	3.59	1.38	.29	*5.65*
PQ 37. Absorption costing is generally very useful in pricing.	2.60	1.38	3.30	1.33	.41	*5.63*

	Pretest		Posttest			
	M	SD	M	SD	r	t
PS 31. Direct costing — choice of product mix.	39.51	7.79	40.45	6.44	.27	1.28
PS 32. Direct costing — choice of production process.	36.33	9.82	37.73	7.70	.35	1.63

PS 33. Direct costing — control.	36.09	9.15	35.99	8.44	.44	0.12
PS 34. Direct costing — pricing.	38.17	8.91	37.04	8.81	.41	1.39
PS 35. Absorption costing — choice of product mix.	38.15	9.75	30.35	9.28	.37	*8.64*
PS 36. Absorption costing — choice of production process.	38.57	8.53	31.58	9.08	.32	*8.05*
PS 37. Absorption costing — control.	36.34	9.65	30.80	8.88	.39	*6.39*
PS 38. Absorption costing — pricing.	38.59	9.26	31.33	9.15	.15	*7.16*

Training objective 11 purports to make participants more positive toward applications for direct costing, and at the same time make them more critical of absorption costing as a generally good accounting method. It is thereby hoped to strike a better balance of participant preferences for the two methods, so that they are given greater opportunities to understand the importance of adapting accounting methods to particular situations. (By contrast with direct costing, the absorption method is generally assumed to be well known and also traditionally well established.) Our findings yield a uniform pattern. The initial mean values for direct costing (PQ 30—33, PS 31—34) and absorption costing (PQ 34—37, PS 35—38) are at the same level. The situation changes at posttest. It was found that out of the eight comparisons drawn for applications of direct costing, the positive attitude was strengthened for six of them, and of these two were significant at the 5-per cent level. There were markedly significant reductions in all eight comparisons drawn for the applications of absorption costing. These findings are in full accord with the training objective.

Training objective (To 12). To increase understanding of the importance of scientific method in management work

	Pretest		Posttest			
	M	SD	M	SD	r	t
PQ 38. Greater provision should be made for scientific method in management.	2.62	0.84	2.63	0.96	.46	0.13
PQ 39. Greater provision should be made for scientific method in purchasing.	3.25	0.95	3.19	1.10	.40	0.63
PQ 40. Greater provision should be made for scientific method in production.	2.11	0.79	2.18	0.85	.37	0.90
PQ 41. Greater provision should be made for scientific method in selling.	2.59	0.86	2.70	1.00	.32	1.19
PQ 42. Greater provision should be made for scientific method in personnel administration.	2.44	0.83	2.49	0.99	.45	0.61

	Pretest		Posttest			
	M	SD	M	SD	r	t
PS 39. Scientific method — management.	37.31	7.28	36.38	6.96	.37	1.38
PS 40. Scientific method — purchasing.	35.98	7.92	34.23	7.00	.36	*2.44*
PS 41. Scientific method — production.	42.03	5.41	40.90	6.33	.56	*2.40*
PS 42. Scientific method — sales.	36.89	7.03	36.29	7.69	.40	0.88
PS 43. Scientific method — personnel administration.	38.94	5.71	37.52	6.50	.56	*2.91*

An interesting pattern emerges when we look at participant attitudes to scientific method in management. For both the PQ and PS variables, as well as for both pretest and posttest, the mutual rank-order is identical in regard to average attitude of participants toward scientific method as applied to different fields. Participants are most positive toward the application of scientific method to production. Attitudes are decreasingly favorable in the areas of personnel administration, selling, management and purchasing in the order named.

For nine of the ten pretest-posttest comparisons, the differences point to a somewhat less positive attitude. Two of the differences are significant at the 5-per cent level.

These findings would thus seem to defeat the training objective. It could be speculatively assumed that the participants as a group are rather uncertain at first as to what scientific method implies. Perhaps it is the sort of concept that commands no more than lip service. But as the training proceeds they acquire greater insight into scientific method and what it can and cannot accomplish, with the result that they take a less awesome view of it. Still reasoning speculatively, we could say that the lower scores at posttest are attributable to this change of attitude. Another explanation might be that the participants (as some of them reported in the interviews) are persuaded by their training to believe that the application of scientific method imposes criteria far too stringent to lend itself readily to the practical working situation.

Discussion

Summing up, the following observations are in order:

The study of mean value differences has produced a number of significant differences, chiefly within the field of business economics. For the most part, these differences point in the same direction for both PQ and PS variables. Their general tendency also agrees with the corresponding training objectives, making it probable that they can be seen as results of training. For both significant and nonsignificant differences, the correlations between pretest and posttest are of such a small order that we have reason to presume relatively low agreement in change between individuals or subgroups within the experimental population. We propose to illuminate this condition in a later section of this Chapter, where we present our analyses for determining the relationship between background variables and change.

Relationships between change and background

At first glance, it would seem natural to follow the same scheme for this purpose as in Chapter 10, where we presented the correlations between background and initial attitudes under each of our nine background hypotheses (Hb 1—Hb 9). For various reasons, however, we have decided to adopt a different procedure in dealing with the background-change correlations.

In consequence of our attempt to keep the effect of initial attitudes under approximate control by making a division into two groups, initial high scorers and initial low scorers, before calculating the correlations, we have obtained a double set of data. Obviously, this has made the data less amenable to ready comprehension. It was not possible to repeat what we did in Chapter 10, that is, employ multivariate methods in order to obtain compressed measures of correlation. We are thus compelled to analyze and interpret single correlations and to look for meaningful patterns of these correlations. When we at the same time can observe that the single correlations exhibit meaningful and significant connections to only a small extent, we have sought to ration the quantity of data as much as possible without reducing their informational value for this reason. On the basis of the analysis plans outlined earlier (see Chap. 10, pp. 156—157), we can see three major areas for analyses:

— relationships between general background variables (bg) and change;
— relationships between specific background variables (bs) and change (exclusive of the variables from B 5—B 11);
— relationships between specific background variables from B 5—B 11 and change.

Over and above these analyses we have, as indicated earlier in this Chapter, performed a further analysis in which correlation distributions between pretest-background and posttest-background were compared.

In presenting the findings, we shall separately set forth each of the above analyses and follow up with a discussion. By way of conclusion, we shall consider the educational implications of our findings.

RELATIONSHIPS BETWEEN CHANGE AND GENERAL BACKGROUND VARIABLES

In our study we have set up nine "general background variables". These are symbolized as "bg" (see Table 35.)

Table 35. *Intercorrelations between bg-variables. N = 140*

bg 1. Age
bg 2. Results of B 3 (Raven's matrices)
bg 3. Results of B 4 (flexibility)
bg 4. Index obtained from evaluations bs J I 1—8 (breadth of experience)
bg 5. Index derived from B 5 a—c (general influence in own organization)
bg 6. Index derived from B 5 a—c (positiveness of own organization's policies)
bg 7. Index derived from B 2 (attendance at course planned by company)
bg 8. Index derived from B 2 (attendance at course matter of "laissez-faire")
bg 9. Index derived from B 2 (attendance at course a planned step towards promotion)

bg 1	bg 2	bg 3	bg 4	bg 5	bg 6	bg 7	bg 8	bg 9
—.25								
—.18	*.30*							
.19	—.05	—.09						
—.06	*.20*	.14	*—.35*					
—.17	*.17*	*.27*	—.08	*.17*				
.04	—.02	*—.23*	*—.23*	*—.22*	*—.33*			
.09	—.02	.03	.10	—.02	.11	—.07		
—.27	*.23*	.16	*—.18*	.14	.14	—.11	—.04	

Correlations $\geq .17$ are significantly $\neq$ at the 5 per cent level.

Unlike the specific background variables (bs variables), the general variables are not related to any one training field, training objective or special group of attitude items. As the designation given to them suggests, we have sought instead to ascertain whether these variables show general relationships with change. It follows that we are not interested in interpreting single relationships between a bg variable and a change variable. This analysis is aimed more at finding answers to certain questions, for example: Does the relationship between bg 1 (age) and change variables exhibit any meaningful tendency that cuts across training fields, training objectives and the total group of change variables? All in all, do bg 7, 8 and 9, which represent different reasons for course attendance, display different patterns in regard to relationship with change variables?

To go about finding answers to questions of this kind, we have computed the associations between bg variables and change scores for the attitude variables (**PQ** and **PS** variables) and put them in the form of χ^2 analyses. As we noted and explained earlier, these analyses were performed on data that were divided into two groups: initial high scorers and initial low scorers. Altogether 828 associations were computed in this way. They are set forth in Table 36 (χ^2 values are signed in order to indicate the direction of the association). It will be noted from the table that a mere 57 of the associations are significant at the 5 % level—hardly 7 % of the total. The single significant associations, both positive and negative, do not give cause to reject any null hypotheses concerning the relationships between general background variables and change.

For the purpose of tentatively finding any meaningful tendencies contained in our data, we carried out two analyses.

In the first analysis, we proceeded on the basis of the *direction* shown by the associations we obtained in relation to the training objectives which underlay the attitude variables included, with no regard taken of association strength. For each of the bg variables we then listed the number of associations which were positive and negative in relation to the training objectives. The findings of this analysis are shown in Table 37.

The second analysis was restricted to the significant associations, with note also taken of the extent to which these express positive and negative associations between bg variables and change variables with reference to training objectives. These findings are given in Table 38.

If one seeks to evaluate the significance of the findings in these tables, and in that connection let the individual appear as a unit, it will scarcely be possible to do so on the basis of our data. That is because the contributions of any one individual to our findings cannot be distinguished. To let the individual appear as a unit means that results pertaining to the same individual are not independent but suspiciously intercorrelated. We have accordingly refrained from significance-testing.

Table 36. χ^2*-values for determining relationships between change and general background variables*

bg-variables

bg 1. Age
bg 2. Results of B 3 (Raven's matrices)
bg 3. Results of B 4 (flexibility-rigidity scale, version by Rubenowitz)
bg 4. Breadth of experience, index obtained from evaluations bs J 1—8
bg 5. General influence in own organization, index derived from B 5 a—c
bg 6. Positiveness in personal opinions of own organization's policies, index derived from B 5 a—c
bg 7. Attendance at course planned by company, from B 2.
bg 8. Attendance at course matter of "laissez-faire", from B 2
bg 9. Attendance at course a planned step towards promotion, from B 2

Business organization

		Initial high scorers									Initial low scorers								
		bg 1	bg 2	bg 3	bg 4	bg 5	bg 6	bg 7	bg 8	bg 9	bg 1	bg 2	bg 3	bg 4	bg 5	bg 6	bg 7	bg 8	bg 9
PQ	1. All too often, unfortunately, top management has not made clear corporate objectives to itself and to higher executives.	—0.48	0.00	2.38	2.20	1.80	1.15	—0.57	0.01	3.45	2.91	— 0.11	0.28	*3.88*	—0.24	—0.05	—0.58	0.00	*—4.60*
PQ	2. Functional heads often find it difficult to subordinate their functional interests to the company's overall objectives.	—3.02	1.17	—0.03	0.21	3.59	0.03	—3.78	—0.26	*4.55*	—3.69	0.53	0.12	—2.64	0.02	0.38	0.65	0.08	0.09
PS	1. Explaining corporate objectives to higher executives.	—0.22	0.22	0.22	—2.65	— 1.36	*4.38*	—0.03	—0.60	—0.06	0.12	— 0.13	0.00	1.49	—1.49	0.13	0.00	0.03	0.00
PS	2. Coordinating the company's objectives.	0.00	0.02	0.14	1.45	0.26	—0.26	—0.15	1.31	0.20	—0.88	— 1.36	0.92	0.06	0.89	—0.35	—0.18	2.80	—0.01
PS	3. Getting functional heads to coorporate.	*4.18*	—0.15	0.35	0.02	1.75	—0.01	—0.71	—0.97	—0.37	0.51	— 2.15	—3.33	—1.44	—0.07	1.94	—1.94	0.83	—1.14
PS	12. Written guidelines in detail of company policy for executives.	1.13	—0.05	—0.82	0.34	—1.60	—0.03	0.40	—0.11	*—4.24*	—0.03	*—11.77*	—0.05	1.60	0.11	—0.18	0.24	—0.36	1.84

PS 13. Written guidelines in general of company policy for executives.	0.07	—0.02	—0.08	—0.75	—2.00	0.30	—0.70	—0.91	*8.72*	—0.09	—0.71	0.02	—0.93	—0.60	1.75	1.04	—2.55	0.44
PS 14. Performance measurement and control-lower-level employees.	—0.62	—0.19	—0.01	0.01	0.09	3.07	—0.25	—0.78	—0.03	3.49	—0.41	—1.42	0.33	0.11	0.46	—0.62	—0.58	—1.56
PS 15. Performance measurement and control-foremen.	—0.34	—1.27	—0.86	—0.85	—0.86	3.58	—0.26	—0.93	—0.61	—0.75	—1.29	—0.08	—1.03	0.29	0.75	0.98	*—7.42*	—0.66
PS 16. Performance measurement and control-department heads.	0.38	0.00	—0.78	—1.19	—0.01	0.16	—2.25	—2.11	0.16	*—7.00*	1.54	0.00	—2.77	—0.01	*5.36*	0.09	*—8.69*	0.35
PS 17. Performance measurement and control-vice presidents.	—1.46	—1.83	—0.01	—1.13	—0.24	1.39	—0.03	—0.96	0.07	—3.69	2.99	1.23	—2.07	—0.28	0.41	—0.15	—1.85	2.78
PS 18. Performance measurement and control-presidents.	—0.03	—0.57	0.02	*—4.91*	—0.01	0.97	0.28	*—4.33*	—0.02	—0.07	*4.65*	—0.54	0.35	1.15	—0.35	0.40	—0.23	2.90
Σ PQ 3—10	1.01	0.13	3.52	0.33	—0.33	0.02	—1.88	1.54	0.16	—2.12	—2.12	—0.09	0.17	—3.66	0.00	0.00	—1.49	0.09
Σ PS 4—11	—0.07	—2.75	—1.41	—0.05	—0.52	—1.17	—0.74	—0.01	—0.01	—0.14	0.21	—1.00	—0.73	—0.33	*5.34*	0.04	—1.46	—0.29

Personnel administration

PQ 18. Executives should take greater interest in their direct personnel management duties.	0.15	0.00	0.19	0.57	—2.58	—0.01	—0.13	—1.15	2.93	1.80	—1.36	—2.26	3.44	—0.25	—2.79	*4.06*	—0.06	—0.09
PQ 19. Companies should take greater interest in internal information and communication.	—0.64	—1.71	—0.01	0.09	*—4.00*	0.08	0.09	—1.19	0.00	2.18	—0.20	—3.02	—0.21	—1.42	—0.01	0.03	*—5.26*	—1.88
PQ 20. Companies should take greater interest in recruitment and selection.	—0.15	3.50	3.03	1.29	1.76	0.45	—0.65	2.34	—0.01	0.24	*—4.73*	—0.06	0.89	—0.09	—0.78	0.36	—0.45	—0.56
PQ 21. Companies should take greater interest in induction of new hires.	0.27	—0.04	—0.81	0.94	—1.77	—0.27	3.11	3.65	0.62	0.80	—0.07	2.06	0.08	—1.87	—0.66	—0.08	0.12	—0.16
PQ 22. Companies should take greater interest in the training of personnel.	0.51	1.41	—0.33	0.34	1.19	*—4.39*	0.01	0.87	—0.19	—0.13	0.11	—0.04	—0.15	—0.35	*—4.94*	—0.33	—3.17	—0.03
PS 19. Managing personnel.	—2.07	2.71	0.31	—0.91	—1.87	1.30	—0.42	—1.05	0.60	3.08	—0.03	—0.39	—0.89	—3.82	—0.39	—0.58	*—5.70*	—1.28
PS 20. Internal information and communication.	—0.14	—0.18	0.14	—0.24	—1.41	0.05	—0.41	—2.79	0.11	—0.20	—1.13	—0.08	—1.18	0.44	—0.40	0.00	*—4.49*	—0.77
PS 21. Recruitment and selection.	0.00	—0.08	—0.50	—0.14	*—16.54*	0.00	—2.88	—0.72	2.74	0.47	—0.40	1.43	—0.04	1.81	0.38	—0.13	—0.02	0.13
PS 22. Induction of new hires.	0.47	—0.99	—1.11	0.00	—0.33	0.00	—0.70	*—6.00*	0.80	0.75	—0.33	0.38	0.10	—0.18	1.25	0.65	—1.72	—1.94
PS 23. Training of personnel.	0.85	—0.29	—0.31	—1.93	—0.53	0.27	0.03	*—5.74*	—1.12	0.27	—0.53	0.00	—0.01	—1.08	1.31	2.88	*—4.11*	0.00

Business economics.

	Initial high scorers									Initial low scorers								
	bg 1	bg 2	bg 3	bg 4	bg 5	bg 6	bg 7	bg 8	bg 9	bg 1	bg 2	bg 3	bg 4	bg 5	bg 6	bg 7	bg 8	bg 9
PQ 23. Companies should systemize their profitability analyses to a greater extent than they are now doing.	0.95	1.33	0.95	—0.64	0.64	0.99	0.13	—0.01	0.01	—0.12	—0.93	—0.88	—0.32	—0.03	—0.56	—2.92	—0.48	—0.75
PQ 24. The data included in profitability analyses are usually defective.	—0.58	0.83	—0.31	2.32	—2.01	—0.28	0.05	—0.83	*3.92*	—0.44	—3.14	—0.20	—0.20	—0.44	—1.77	—0.05	0.00	—3.12
PS 24. Profitability analyses.	—0.51	—1.63	0.50	0.58	—2.20	*4.85*	—2.89	—0.83	—1.44	*4.00*	—0.27	—0.45	*6.29*	—0.25	—0.26	—0.45	—0.03	—0.25
PS 25. Data included in profitability analyses.	3.40	—*5.51*	—1.35	*4.06*	—1.84	—0.13	—2.84	—0.09	—1.84	3.71	0.26	1.79	0.18	—1.33	—0.05	0.13	—0.07	—0.56
PS 26. Very high liquidity in every situation.	0.81	—0.36	—2.19	0.24	—0.47	0.00	0.04	0.59	3.45	—0.59	0.02	—0.04	2.55	—1.54	0.50	—1.23	0.02	0.12
PS 27. High liquidity as a matter of principle.	—0.61	—1.34	—*4.75*	—2.76	—0.01	0.07	—0.07	—1.67	0.60	0.05	—1.38	0.76	*7.15*	—0.59	0.00	—2.77	—0.01	—2.33
PS 28. Liquidity adapted to company policy.	0.55	—1.54	—0.78	—0.07	—2.02	—0.71	0.03	—1.26	1.37	—0.71	0.09	0.00	—1.50	1.96	—1.02	0.71	—0.59	*7.78*
PS 29. High liquidity not intrinsically desirable.	0.16	0.00	—0.16	—0.69	—0.77	0.48	0.05	—*4.78*	2.27	1.66	—0.05	—0.09	—0.56	—0.03	—0.32	—0.09	0.52	—0.27
PS 30. Consistent maintenance of low liquidity.	—1.45	0.79	—0.12	0.03	—2.97	—0.72	0.24	2.45	0.31	0.45	—1.34	*5.33*	1.81	—0.07	—0.94	—1.01	0.31	—1.55
PS 31. Direct costing-choice of product mix.	—0.43	—0.03	—0.76	—1.24	—0.15	0.95	—1.19	—0.02	0.00	0.02	0.08	—0.49	1.59	0.18	—0.08	0.02	—*4.94*	—0.72
PS 32. Direct costing-choice of production process.	—0.35	0.62	0.05	—0.05	3.26	0.45	—0.69	—1.76	0.09	—0.08	—0.14	—0.10	1.27	—1.93	0.06	—*4.30*	—0.11	—0.17
PS 33. Direct costing-control.	1.68	—0.20	—3.72	0.89	—0.39	1.53	0.54	0.03	—0.24	0.48	0.11	—1.16	0.66	—0.02	—0.91	—0.44	—1.46	0.09
PS 34. Direct costing-pricing.	3.27	—0.69	-*11.09*	—0.27	—0.06	0.69	0.36	—0.18	0.36	—0.60	—1.59	0.60	0.80	—0.80	—0.17	—1.06	—0.59	—0.09
PS 35. Absorption costing-choice of product mix.	—0.03	0.70	—2.31	0.11	—2.25	0.25	0.11	0.51	—0.03	—1.89	0.11	0.02	—0.27	0.00	—0.04	0.04	0.07	—0.11
PS 36. Absorption costing-choice of production process.	0.01	0.18	0.16	0.01	—0.17	—0.01	—2.44	0.02	—3.63	—0.67	0.38	0.20	—0.29	0.93	—0.34	0.41	0.00	0.56
PS 37. Absorption costing-control.	—1.23	2.38	0.00	—0.02	0.16	0.66	—0.30	0.74	—0.19	0.00	0.43	0.36	0.61	—0.12	—0.16	—0.12	—0.11	*4.77*
PS 38. Absorption costing-pricing.	—0.60	1.69	0.91	0.07	—3.31	0.62	—0.01	0.06	0.20	0.30	0.09	0.43	1.90	—0.62	2.71	—*5.44*	—0.18	—1.54

Scientific metod in management

	bg 1	bg 2	bg 3	bg 4	bg 5	bg 6	bg 7	bg 8	bg 9	bg 1	bg 2	bg 3	bg 4	bg 5	bg 6	bg 7	bg 8	bg 9
PS 39. Scientific method-management.	0.02	—3.67	—0.19	—0.41	—0.29	1.89	0.31	—3.63	—0.24	—*4.89*	0.05	1.76	0.30	—0.84	0.92	—1.15	0.00	—0.03
PS 40. Scientific method-purchasing.	2.49	—2.80	—*4.43*	0.02	—*6.70*	0.11	—0.51	—1.16	—0.45	0.00	0.42	2.26	1.24	—1.44	0.03	—*7.16*	1.55	0.93
PS 41. Scientific method-production.	—0.74	—2.51	—1.07	0.58	—0.84	0.34	—1.49	—0.81	—3.45	—0.03	*6.93*	3.20	0.03	—0.59	—2.02	—*4.75*	—0.88	—0.40
PS 42. Scientific method-sales.	—0.16	—0.01	0.01	0.06	—*5.59*	—*4.21*	—1.61	0.20	0.32	—0.11	0.00	*3.97*	—0.01	—0.23	0.11	—3.56	0.20	—1.31
PS 43. Scientific method-personnel administration.	0.15	—0.01	—0.03	0.10	—*9.97*	—0.77	—0.66	—*3.90*	0.89	0.11	0.20	2.02	—0.84	0.40	—*4.74*	—*9.21*	—0.26	—0.02

Table 37. *Associations between change and bg-variables.* Distribution of associations in right (R) and wrong (W) direction according to training objectives.

bg-variables	*Initial high scorers*		*Initial low scorers*	
	R	W	R	W
bg 1. Age	23	23	24	22
bg 2. Results of B 3 (Raven's matrices)	18	28	17	29
bg 3. Results of B 4 (flexibility)	19	27	21	25
bg 4. Index obtained from evaluations bs J I 1—8 (breadth of experience)	23	23	22	24
bg 5. Index derived from B 5 a—c (general influence in own organization)	15	31	15	31
bg 6. Index derived from B 5 a—c (positiveness of own organization's policies)	29	17	21	25
bg 7. Index derived from B 2 (attendance at course planned by company)	17	29	21	25
bg 8. Index derived from B 2 (attendance at course matter of "laissez-faire")	11	35	15	35
bg 9. Index derived from B 2 (attendance at course a planned step towards promotion)	28	18	15	31

Table 38. *Significant associations between change and bg-variables* Distribution of significant associations in right (R) and wrong (W) direction according to training abjectives.

bg-variables	*Initial high scorers*		*Initial low scorers*	
	R	W	R	W
bg 1. Age	1	—	1	2
bg 2. Results of B 3 (Raven's matrices)	—	1	3	1
bg 3. Results of B 4 (flexibility)	1	2	2	—
bg 4. Index obtained from evaluations bs J I 1—8 (breadth of experience)	1	1	2	1
bg 5. Index derived from B 5 a—c (general influence in own organization)	—	5	—	—
bg 6. Index derived from B 5 a—c (positiveness of own organization's policies	2	2	2	2
bg 7. Index derived from B 2 (attendance at course planned by company	—	—	1	5
bg 8. Index derived from B 2 (attendance at course matter of "laissez-faire")	—	5	—	7
bg 9. Index derived from B 2 (attendance at course a planned step towards promotion)	4	—	1	2

In respect of initial high scorers, tabulation of the first analysis indicates that bg 6 (Positiveness in personal opinions of own organization's policies) and bg 9 (Attendance at course a planned step towards promotion) exhibit the most relationships pointing to change in a positive direction. It is not easy to arrive at a meaningful interpretation of this result for bg 6. Perhaps that is because the bg 6 variable expresses the ability of an individual to adapt positively to the fusion process to which he is subjected in his company, and that this ability in turn is linked with a more general ability to adapt to and be influenced in the social situation, as well as to the stimuli given, for instance, in the training herein studied. We think there is support for this view in the fact that bg 6 correlates positively (r = .27, admittedly weak yet significant) with bg 3, which is a variable for the determination of flexibility.

Perhaps it is also plausible to assume that many of the participants who rank high in positive attitude to the policies of their organizations come from companies having highly advanced policies in line with the objectives of training. In conformity with theories of attitude influence, therefore, these participants readily tend to be reinforced in their attitudes. We shall have reason to revert to the latter assumption later on when we discuss the findings yielded by the relationships worked out between change and conditions in own organization (B 5—B 11).

As for bg 9, it lies ready to hand to put a meaningful interpretation on the result. Persons who attend Yxtaholm courses as a planned step towards promotion may reasonably be expected to have strong motivation for the assimilation of training content, especially when it is remembered that promotion at this level usually requires broader knowledge of matters over and above functional boundaries. The removal of inter-functional barriers is of course a primary purpose of management training.

Most of the relationships with change in a negative direction vis-a-vis training objectives are shown by bg 8 (Attendance at course matter of "laissez-faire") and bg 5 (General influence in own organization). The tendency of bg 8 and change to correlate negatively does not appear difficult to accept as meningful. Participants who subjectively feel that the decision for them to take training came about accidentally could be presumed to regard attendance as providing more of an opportunity for relaxation than for serious assimilation of training content. Note that the correlation between bg 8 and bg 9 is — .04. These variables thus have no common variance which could be assumed from the results above.

The tendency for bg 5 seems to be more difficult even to interpret speculatively. Might it be that participants, in the process of developing a great influence in their own organization, become so attached to their attitudes or evaluations that they are less amenable to influence in the training situation?

A somewhat different picture emerges for the initial low scorers. We do not have any bg variables showing high positive associations in the direction of desired change. On the other hand, both bg 8 and bg 5 show the same tendency to associate negatively with positive change as for initial high scorers. The same negative tendency is exhibited by bg 9, which for initial high scorers pointed in a positive direction. We do not venture to present av hypothetical explanation for the latter finding.

In regard to the second analysis, where we looked at the distribution of the significant associations between bg variables and change, the result, naturally enough, yields about the same pattern as in the first analysis. Thus we again find for initial high scorers most of the positive associations in accordance with training objectives for variables bg 6 and bg 9, and most of the negative associations for bg 5 and bg 8.

For initial low scorers, we again find that bg 8 exhibits most of the negative associations. From the second analysis we therefore conclude that its findings generally support those of the first analysis, and that no further discussion is therefore required.

RELATIONSHIPS BETWEEN CHANGE AND SPECIFIC BACKGROUND VARIABLES (bs)

(apart from variables included in B 5—B 11)

A relatively large number of χ^2-analyses have been computed for this sector of analysis, but once again only a small proportion (about five per cent!) are significant at the 5 % level. Accordingly we cannot verify the hypotheses concerning the relationships between change and the background variables of knowledge, job experience, personal interests and present job duties, on the basis of the results obtained.

What we can do instead, however, is to look for tendencies toward meaningful relationships, which in their turn can give rise to hypotheses.

Bearing in mind the difficult comprehensibility which accompanies an excessive quantity of data, we have limited ourselves to the χ^2-analyses of specific background variables and their counterparts among the attitude variables. (χ^2-values are signed to indicate the direction of the assocation.) Instead of grouping the bs variables with reference to the background hypotheses, as was done in Chapter 10, we have elected to report the results under each training objective, since we cannot in any case test these hypotheses with the help of a multivariate summary measure. Inasmuch as the findings, to the extent they indicate meaningful patterns, tend to do so more within fields of training than within different categories of background variables, the patterns should take on greater clarity by this means of grouping the findings.

In the presentation and discussion of our findings, we have thought it appropriate to report all the findings first and then follow up with a single commentary.

To 1 To increase understanding of the importance of having a company explain corporate aims to itself and to its employees.

PQ 1 All too often, unfortunately management has not made clear corporate objectives to itself and to higher executives.

PS 1 Explaining corporate objectives to higher executives.

		PQ 1		PS 1	
		I+	I–	I+	I–
bs K 1	Establishment of corporate aims and objectives (knowledge of)	−3.70	−2.03	−0.22	1.10
bs E 1	Establishment of corporate aims and objectives (experience of)	−1.28	*−14.43*	1.46	0.28
bs J II 1	Analyses of company objectives (actual job tasks)	0.17	1.99	0.08	0.34
bs I 7	On corporate aims and objectives (interest in)	*3.60*	0.20	2.33	3.09

To 2 To increase understanding of the importance of having a company coordinate its resources.

PS 2 Coordinating the company's resources.

		PS2	
		I+	I–
bs J II 2	Work of coordinating resources (actual job tasks)	0.04	0.19
bs I 8	On coordination of company resources (interest in)	0.28	−0.02

To 4 To increase understanding of the importance of having a company clarify and apply its policies.

PS 12 Written guidelines in detail of company policy for executives.

PS 13 Written guidelines in general of company policy for executives.

		PS 12		PS 13	
		I+	I–	I+	I–
bs K 13	Formulation of written policy for executives (knowledge of)	−0.43	−1.77	−0.36	0.00
bs E 13	Formulation of written policy for executives (experience in)	−0.63	1.91	0.01	0.32
bs J II 3	Work of formulating and applying written policies (actual job tasks)	−0.02	−1.13	−0.02	1.26
bs I 9	On clarification and application of company policies (interest in)	−0.06	−1.13	−0.23	−1.67

To 5 To increase understanding of the importance of performance controls.

PS 16 Performance measurement and control — lower-level employees.
PS 15 Performance measurement and control — foremen.
PS 16 Performance measurement and control — department heads.
PS 17 Performance measurement and control — vice presidents.
PS 18 Performance measurement and control — presidents.

		I+					I—				
		PS 14	15	16	17	18	PS 14	15	16	17	18
bs K 14	Performance measurement and control of executives (knowledge of)	—0.28	—1.71	0.10	—0.67	—1.81	—0.41	—0.19	—0.34	—0.03	0.00
be E 14	Performance measurement and control of executives (experience of)	0.00	—0.07	1.82	—0.01	—0.04	0.46	—0.40	—1.89	—1.51	0.23
bs J II 4	Work with performance measurement and control (actual job tasks)	—3.44	—1.15	0.21	0.01	0.10	0.62	0.15	0.23	—0.51	0.28
bs I 10	On performance measurement and control of executives (interest in)	0.07	0.63	0.58	0.02	2.03	0.15	—0.10	—0.28	—0.01	0.00

To 6 To increase understanding of the importance of personnel management questions.

PQ 18 Executives should take greater interest in their direct personnel management duties.
PS 19 Managing personnel.

		PQ 18		PS 19	
		I+	I—	I+	I—
bs K 15	Personnel management (knowledge of)	—3.53	0.01	1.72	0.29
bs E 15	Personnel management (experience of)	0.02	—3.75	—0.06	0.00
bs J II 5	Personnel management (actual job tasks)	—0.69	*—7.62*	—1.78	0.02
bs I 13	On groups and leadership (interest in)	0.07	0.61	0.36	2.27

To 7 To increase understanding of the importance of internal information and communication.

PQ 19 Companies should take greater interest in internal information and communication.
PS 20 Internal information and communication.

		PQ 19		PS 20	
		I+	I—	I+	I—
bs K 16	Internal information and communication (knowledge of)	—0.81	—0.02	0.90	—0.32
bs E 16	Internal information and communication (experience of)	0.14	0.88	0.76	—0.54
bs J II 6	Internal information and communication (actual job tasks)	*—4.34*	1.49	—0.52	0.52
bs I 12	On internal information and communication (interest in)	—0.18	2.14	1.85	—3.74

To 8 To increase understanding of the importance of personnel administrative techniques.

PQ 20 Companies should take greater interest in recruitment and selection.
PS 21 Recruitment and selection.
PQ 21 Companies should take greater interest in the induction of new hires.
PS 22 Induction of new hires.
PQ 22 Companies should take greater interest in the training of personnel.
PS 23 Training of personnel.

		PQ 20		PS 21	
		I+	I—	I+	I—
bs K 17	Recruitment and selection of personnel (knowledge of)	3.75	—0.36	0.05	—0.08
bs E 17	Recruitment and selection of personnel (experience of)	—0.16	—0.01	*5.12*	0.78
bs J II 7	Personnel administration (actual job tasks)	—0.87	0.22	—0.12	—0.60
bs I 15	On recruitment, selection, transfers and promotions (interest in)	—0.81	—0.56	—1.65	—.1.31

		PQ 21		PS 22	
		I+	I—	I+	I—
bs K 18	Induction of new hires (knowledge of)	*—4.84*	—0.78	—0.28	—3.06
bs E 18	Induction of new hires (experience of)	—2.84	0.58	0.81	—0.02
bs J II 7	Personnel administration (actual job tasks)	—0.61	—1.87	—2.53	0.10

		PQ 22		PS 23	
		I+	I—	I+	I—
bs K 19	Training of personnel (knowledge of)	—0.52	—0.01	1.01	0.08
bs E 19	Training of personnel (experience of)	1.86	0.15	2.24	0.10
bs J II 7	Personnel administration (actual job tasks)	1.15	—0.01	—1.80	—0.51

To 9 To make participants more critical of source data used in profitability analyses.

PQ 23 Companies should systemize their profitability analyses to a greater extent than they are now doing.
PS 24 Profitability analyses.
PQ 24 The data included in profitability analyses are usually defective.
PS 25 Data included in profitability analyses.

		PQ 23		PS 24		PQ 24		PS 25	
		I+	I—	I+	I—	I+	I—	I+	I—
bs K 20	Profitability analyses (knowledge of)	0.01	—0.32	0.65	0.25	—0.31	0.21	—0.05	0.86
bs E 20	Profitability analyses (experience of)	0.91	—1.07	0.03	0.77	—0.25	0.06	1.73	—1.01
bs J II 8	Profitability analyses (actual job tasks)	0.20	1.41	1.16	0.16	—0.25	0.07	—3.07	0.15
bs I 17	On profitability analyses (interest in)	—0.01	—0.01	1.61	0.04	—0.03	—2.63	0.00	—0.67

To 12 To increase understanding of the importance of scientific method in management work.

PS 39 Scientific method — management

		PS 39	
		I+	I—
bs K 27	Scientific research in corporate organization (knowledge of)	—0.34	0.38
bs E 27	Scientific research in corporate organization (experience of)	—0.01	—1.09
bs I 4	On research in corporate organization (interest in)	0.00	0.57

PS 40 Scientific method — purchasing.
PS 42 Scientific method — sales.

		PS 40		PS 42	
		I+	I—	I+	I—
bs K 28	Scientific research in business economics (knowledge of)	0.58	—0.65	3.04	—1.66
bs E 28	Scientific research in business economics (experience of)	1.29	—0.02	0.45	—0.01
bs I 6	On research in business economics (interest in)	*5.98*	—2.34	0.27	—0.63

PS 43 Scientific method — personnel administration.

		PS 43	
		I+	I—
bs K 29	Scientific research in personnel administration (knowledge of)	*5.12*	3.54
bs E 29	Scientific research in personnel administration (experience of)	0.01	1.09
bs I 5	On research in personnel administration (interest in)	—0.11	—0.13

Discussion of the findings

By way of introducing this section, we pointed out that only about 5 % of all the analyses are significant at the 5 % level. This fact gives rise

To 10 To increase understanding of the importance of adapting liquidity to general company policy.

PS 26 Very high liquidity in every situation.
PS 27 High liquidity as a matter of principle.
PS 28 Liquidity adapted to company policy.
PS 29 High liquidity no intrinsically desirable.
PS 30 Consistent maintenance of low liquidity.

		PS 26		PS 27		PS 28		PS 29		PS 30	
		I+	I−	I+	I−	I+	I−	I+	I−	I+	I−
bs K 21	Liquidity (knowledge of)	−0.81	−0.05	−0.01	0.07	0.30	−2.24	−1.13	0.08	0.09	−0.21
bs E 21	Liquidity (experience of)	−1.61	0.00	0.19	0.03	1.15	−0.32	−1.28	0.46	2.40	0.01
bs J II 9	Liquidity (actual job tasks)	−0.15	−2.35	−0.18	0.52	−1.60	−0.14	0.08	−0.01	0.72	1.81
bs I 19	On liquidity (interest in)	−0.24	−0.05	−0.60	0.02	0.13	0.89	0.13	0.05	0.24	0.61

To 11 To increase understanding of the importance of adapting methods of costing to particular situations.

PS 31 Direct costing — choice of product mix.
PS 32 Direct costing — choice of production process.
PS 33 Direct costing — control.
PS 34 Direct costing — pricing.
PS 35 Absorption costing — choice of product mix.
PS 36 Absorption costing — choice of production process.
PS 37 Absorption costing — control.
PS 38 Absorption costing — pricing.

		PS 31		PS 32		PS 33		PS 34	
		I+	I−	I+	I−	I+	I−	I+	I−
bs K 24	Costing, direct method (knowledge of)	0.98	*−5.88*	−0.52	0.01	*5.13*	−2.67	−0.06	−0.12
bs E 24	Costing, direct method (experience of)	0.28	*−4.82*	−0.52	0.01	1.93	*−4.06*	−0.85	−0.84
bs J II 10	Methods of costing (actual job tasks)	1.75	−0.02	0.45	0.45	−0.80	0.71	−0.46	−0.09
bs I 20	On methods of costing (interest in)	−2.11	0.09	−0.98	0.01	−0.02	−0.90	−0.69	2.16

		PS 35		PS 36		PS 37		PS 38	
		I+	I−	I+	I−	I+	I−	I+	I−
bs K 25	Costing, absorption method (knowledge of)	1.36	−0.02	*6.63*	0.00	0.19	0.23	−0.91	*4.69*
bs E 25	Costing, absorption method (experience of)	0.70	0.00	2.42	−0.24	−0.30	0.23	−0.06	1.78
bs J II 10	Methods of costing (actual job tasks)	−0.70	0.11	1.13	0.24	0.19	−0.10	0.01	0.11
bs I 20	On methods of costing (interest in)	2.78	3.56	*6.44*	0.38	1.94	0.10	3.34	0.39

to uneasy associations with a result that is governed by chance. The distribution of significant associations in our data is shown below.

		Initial high scorers	Initial low scorers
bs K	(knowledge) — change	3 (in pos. dir.) 1 (in neg. dir.)	1 (in pos. dir.) 1 (in neg. dir.)
bs E	(experience) — change	1 (in pos. dir.)	3 (in neg. dir.)
bs J II	(actual job tasks) — change	1 (in neg. dir.)	1 (in neg. dir.)
bs I	(interest) — change	3 (in pos. dir.)	0
	total	7 (in pos. dir.) 2 (in neg. dir.)	1 (in pos. dir.) 5 (in neg. dir.)

Naturally, the small number of significant associations between background variables and change makes it impossible to draw meaningful comparisons of how the different categories of background variables relate significantly to change. (Nor has it proved possible to find meaningful tendencies in this respect if, leaving significance out of account, we study only the direction of associations for the different categories.) If we confine ourselves to observing where the significant associations point for initial high scorers and initial low scorers across the different categories of background variables, we find that seven of the nine associations in the former group go in a positive direction, while five of the six associations in the latter group point negatively.

It is tempting to speculate why the associations in the two scoring groups should show this inverse relationship. An interesting project for further research would be to ascertain whether participants with high values for these background variables, in combination with high initial attitudes, are reinforced in their positive attitudes by training, whereas participants with high values for background variables but low initial attitudes tend to be reinforced in their negative attitudes.

A plausible hypothesis might be that high values for background variables could be both positively and negatively charged. A person who rates himself as having great experience of a subject matter area may have favorable experiences thereof, which would be expressed in a high initial attitude to it; but his experiences may also be negative, which would be reflected in a less positive initial attitude. If we then assume that training results in a reinforcement of initial attitude, regardless of its direction, the first case would give us a positive relationship between experience and change, and the second case a correspondingly negative relationship.

It could thus be fruitful for further research to amplify the dimension of knowledge, experience and the like by including the measurement of affective components.

As a further comment on the analytical findings, we should like to call attention to the findings obtained under one training objective: *To 11. To increase understanding of the importance of adapting methods of costing to particular situations.*

It is within this field that we have the largest proportion of significant associations, about 11 %. Considered by itself, this observation tells us little. But it can acquire greater relevance when we simultaneously note the pretest-posttest differences (see p. 185) for both the PQ and PS variables, where the most significant mean value differences emerge in this very field. There are several likely explanations for the similarity: a powerful influence has been exerted by training in this field; this influence has changed the behavior of participants; we have had fairly valid measuring variables for the determination of these changes; and the significant associations we obtained between background and change reflect genuine relationships.

So even though we cannot generally reject null hypotheses, we can, in the light of the discourse pursued above, and still reasoning speculatively, view some of the findings as indicative of relationships between specific background variables (knowledge, work experience, personal interests and present job duties) and change.

RELATIONSHIPS BETWEEN CHANGE AND SPECIFIC BACKGROUND VARIABLES FROM B 5 — B 11

With the results from measuring instruments B 5 — B 11 as a guide, we were able to take a number of subject matter areas and divide the participant group into subgroups with reference to policies within own organization and the personal opinions of these policies held by the participants. In so doing we intended to illuminate hypothesis Hb 8: *Change covaries with policies within the organization and "proximity" to these policies.*

Taking each subject matter area separately, we then compared the component subgroups with reference to resultant change for the corresponding attitude variables. (In keeping with the procedure followed for other analyses in this chapter, we distinguished between initial high scorers and initial low scorers.)

For each subgroup we determined the percentage of positive change, that is, change in a direction conforming with the established training objectives (Prop.change+). The relationships between subgroup affiliation and change were tested for significance by χ^2 analysis. Only subgroups with $N \geq 10$ were included for this purpose.

The analytical findings for different subject matter areas are tabulated on the following pages, after which they are considered in a discussion.

B 6 Written policies

Group	Conditions in own organization	Personal opinion
1	Specifically worded for the most part	+
2	Specifically worded for the most part	—
3	Generally worded for the most part	+
4	Generally worded for the most part	—
5	Written guidelines lacking for the most part	+
6	Written guidelines lacking for the most part	—

PS 12 Written guidelines in detail of company policy for executives
PS 13 Written guidelines in general of company policy for executives

			1	2	3	4	5	6	
PS 12	I+	N	16	.	21	14	.	.	DF 2 χ^2=3,93
		Prop.change+	.12	.	.38	.43	.	.	
	I—	N	10	.	.	21	.	24	DF 2 χ^2=0,97
		Prop.change+	.70	.	.	.76	.	.62	

			1	2	3	4	5	6	
PS 13	I+	N	13	.	18	19	.	.	DF 2 χ^2=2,87
		Prop.change+	.31	.	.17	.42	.	.	
	I—	N	13	.	12	16	.	24	DF 3 χ^2=5,57
		Prop.change+	.85	.	.58	.81	.	.54	

B 7 Performance control

Group	Conditions in own organization	Personal opinion
1	Systematically carried out	+
2	Systematically carried out	—
3	Not systematically carried out	+
4	Not systematically carried out	—

PS 14 Performance measurement and control — lower-level employees
PS 15 Performance measurement and control — foremen
PS 16 Performance measurement and control — department heads
PS 17 Performance measurement and control — vice presidents
PS 18 Performance measurement and control — presidents

			1	2	3	4	
PS 14	I+	N	34	10	.	16	
	Prop.change +		.35	.20	.	.37	DF 2 χ^2=0,87
	I—	N	44	.	.	14	
	Prop.change +		.59	.	.	.64	DF 1 χ^2=0,12

			1	2	3	4	
PS 15	I+	N	41	.	.	15	
	Prop.change +		.39	.	.	.67	DF 1 χ^2=3,43
	I—	N	37	.	.	15	
	Prop.change +		.68	.	.	.60	DF 1 χ^2=0,30

			1	2	3	4	
PS 16	I+	N	41	.	.	18	
	Prop.change +		.39	.	.	.67	DF 1 χ^2=3,74
	I—	N	37	12	.	12	
	Prop.change +		.68	.67	.	.50	DF 2 χ^2=1,13

			1	2	3	4	
PS 17	I+	N	42	.	.	18	
	Prop.change +		.36	.	.	.33	DF 1 $^2\chi$=0,03
	I—	N	36	12	.	12	
	Prop.change +		.64	.75	.	.58	DF 2 χ^2=0,78

			1	2	3	4	
PS 18	I+	N	35	.	.	21	
	Prop.change +		.40	.	.	.33	DF 1 χ^2=0,02
	I—	N	43	12	.	.	
	Prop.change +		.79	.75	.	.	DF 1 χ^2=0,12

B 8 Recruitment and selection

Group	Conditions in own organization	Personal opinion
1	Systematically carried out	+
2	Systematically carried out	—
3	Not systematically carried out	+
4	Not systematically carried out	—

PQ 20 Companies should take greater interest in recruitment and selection
PS 21 Recruitment and selection

			1	2	3	4	
PQ 20	I+	N	.	14	15	.	
	Prop.change +		.	.36	.40	.	DF 1 χ^2= 0,06
	I—	N	13	29	45	17	
	Prop.change +		.85	.86	.89	.53	DF 3 χ^2=*11,44*

			1	2	3	4	
PS 21	I+	N	.	24	32	10	
	Prop.change +		.	.67	.28	.60	DF 2 χ^2= *8,93*
	I—	N	10	19	28	11	
	Prop.change +		.70	.68	.64	.55	DF 3 χ^2=0,73

B 9 Internal information and communication

Group	Conditions in own organization	Personal opinion
1	Systematic both in form and content	+

2	Systematic both in form and content	—
3	Unsystematic in one or in both	+
4	Unsystematic in one or in both	—

PQ 19 Companies should take greater interest in internal information and communication
PS 20 Internal information and communication

			1	2	3	4	
PQ 19	I+	N	36	12	.	38	
		Prop.change +	.19	.25	.	.16	DF 2 $\chi^2=0,54$
	I—	N	15	.	.	19	
		Prop.change +	.27	.	.	.42	DF 1 $\chi^2=0,87$

			1	2	3	4	
PS 20	I+	N	23	11	.	29	
		Prop.change +	.39	.09	.	.31	DF 2 $\chi^2=3,26$
	I—	N	28	10	.	28	
		Prop.change +	.75	.80	.	.75	DF 2 $\chi^2=0,23$

B 10 Liquidity

Group	Conditions in own organization	Personal opinion
1	Liquidity adapted to company	+
2	Liquidity adapted to company	—
3	High liquidity	+
4	High liquidity	—
5	Not applicable	

PS 26 Very high liquidity in every situation
PS 27 High liquidity as a matter of principle
PS 28 Liquidity adapted to company policy
PS 29 High liquidity not intrinsically desirable
PS 30 Consistent maintenance of low liquidity

			1	2	3	4	5	
PS 26	I+	N	10	20	15	13	12	
		Prop.change +	.40	.30	.40	.62	.33	DF 4 $\chi^2=3,53$
	I—	N	.	29	.	.	21	
		Prop.change +	.	.55	.	.	.57	DF 1 $\chi^2=0,01$

			1	2	3	4	5	
PS 27	I+	N	.	21	14	13	12	
		Prop.change +	.	.29	.57	.23	.25	DF 3 $\chi^2=4,83$
	I—	N	.	28	.	.	21	
		Prop.change +	.	.75	.	.	.48	DF 1 $\chi^2=3,76$

			1	2	3	4	5	
PS 28	I+	N	.	26	13	.	14	
		Prop.change +	.	.19	.08	.	.07	DF 2 $\chi^2=1,59$
	I—	N	.	23	.	14	19	
		Prop.change +	.	.52	.	.57	.63	DF 2 $\chi^2=0,40$

			1	2	3	4	5	
PS 29	I+	N	11	31	.	.	18	
		Prop.change +	.00	.26	.	.	.15	DF 2 $\chi^2=5,53$
	I—	N	.	18	12	16	15	
		Prop.change +	.	.89	.92	.75	.60	DF 3 $\chi^2=5,58$

		1	2	3	4	5	
PS 30	I+ N	.	30	.	11	17	
	Prop.change +	.	.23	.	.45	.29	DF 2 χ^2=1,95
	I− N	.	19	18	11	16	
	Prop.change +	.	.68	.67	.64	.56	DF 3 χ^2=0,53

B 11 Costing methods

Group	Conditions in own organization	Personal opinion
1	Absorption costing	+
2	Absorption costing	—
3	Direct costing	+
4	Direct costing	—
5	Not applicable	

Note: Two groups (absorption + direct costing) were not included for analysis owing to their small frequencies.

PS 31 Direct costing — choice of product mix

		1	2	3	4	5	
PS 31	I+ N	15	.	20	.	18	
	Prop.change +	.27	.	.35	.	.06	DF 2 χ^2= 4,81
	I− N	10	.	.	.	36	
	Prop.change +	.50	.	.	.	.78	DF 1 χ^2= 2,85

PS 32 Direct costing — choice of production process

		1	2	3	4	5	
PS 32	I+ N	12	.	14	.	27	
	Prop.change +	.25	.	.43	.	.26	DF 2 χ^2= 1,44
	I− N	14	10	.	.	35	
	Prop.change +	.64	.80	.	.	.80	DF 2 χ^2= 1,33

PS 33 Direct costing — control

		1	2	3	4	5	
PS 33	I+ N	15	17	16	.	15	
	Prop.change +	.33	.59	.50	.	.07	DF 3 χ^2=*10,44*
	I− N	17	10	10	.	20	
	Prop.change +	.71	.70	.80	.	.70	DF 3 χ^2= 0,53

PS 34 Direct costing — pricing

		1	2	3	4	5	
PS 34	I+ N	16	10	20	.	10	
	Prop.change +	.25	.30	.30	.	.40	DF 3 χ^2= 0,59
	I− N	13	13	.	.	28	
	Prop.change +	.85	1.00	.	.	.64	DF 2 χ^2= *6,92*

PS 35 Absorption costing — choice of product mix

		1	2	3	4	5	
PS 35	I+ N	20	12	.	.	25	
	Prop.change +	.65	.25	.20	.	.28	DF 2 χ^2= *7,71*
	I− N	.	.	20	.	29	
	Prop.change +	.	.	.80	.	.62	DF 1 χ^2= 1,81

PS 36 Absorption costing — choice of production process

			1	2	3	4	5	
PS 36	I+	N	20	.	.	.	29	
	Prop.change +		.40	.	.	.	.28	DF 1 $\chi^2 = 0{,}77$
	I−	N	.	.	12	.	33	
	Prop.change +		.	.	.83	.	.70	DF 2 $\chi^2 = 0{,}92$

PS 37 Absorption costing — control

			1	2	3	4	5	
PS 37	I+	N	22	16	.	.	17	
	Prop.change +		.36	.19	.	.	.12	DF 2 $\chi^2 = 3{,}48$
	I−	N	10	11	22	.	18	
	Prop.change +		.70	.82	.73	.	.56	DF 3 $\chi^2 = 2{,}31$

PS 38 Absorption costing — pricing

			1	2	3	4	5	
PS 38	I+	N	21	15	.	.	16	
	Prop.change +		.32	.33	.	.	.12	DF 2 $\chi^2 = 6{,}43$
	I−	N	.	.	16	13	22	
	Prop.change +		.	.	.75	.62	.59	DF 2 $\chi^2 = 1{,}10$

Discussion

The analysis of differences in change for various subgroups, obtained from conditions in places where the participants work and from their personal opinion of these conditions, has resulted in a number of χ^2 values. Five of these values (or about 10 %) are significant at the 5 % level.

Four of the values relate to b 11, costing methods. Once again we find a divergence for this topic as compared with the others, in that significant outcomes are concentrated therein. This condition was variously explained in the previous analysis-reporting section.

The other findings are not such as to lend support to hypothesis Hb 8: Change and policies within the organization and "proximity" to these policies covary.

In our discussion of the findings we shall be solely concerned with topic B 11 (costing methods).

Under this head the participants were divided into subgroups as follows:

Group	Condition in own organization	Personal opinion
1.	Absorption costing	+
2.	Absorption costing	—
3.	Direct costing	+
4.	Direct costing	—
5.	Not applicable	

As was discussed earlier in this chapter training objective 11 "purports to make partipicipants more positive towards applications for direct costing, and at the same time make them more critical of absorbtion costing as a generally good accounting metod. It is thereby hoped to strike a better balance of participant preferences for the two methods, so that they are given greater opportunities to understand the importance of adapting accounting methods to particular situations." To help us penetrate the findings in area B 11 (costing methods), we refer again to the theoretical discussion in Chapter 8 (pages 104—106) based on Bakke's fusion process and Sherif's social judgment involvement approach. The studies of attitudes and attitude change therein considered have provided the main starting points for our construction of instrument B 5 — B 11. In this connection certain subgroups in the B 11 area are of particular interest.

- Group 1, initial high scorers, which have *absorption costing* at their companies and are positive (PO+) towards it.
- Group 3, initial high scorers, which have *direct costing* at their companies and are positive (PO+) to it.
- Group 5, embracing both scoring groups, where the question of absorption versus direct costing was not applicable to their companies.

According to our discussion in Chapter 8 we should find the following: Within the first grouping we should find those participants who have accepted absorption costing as this method is applied in their own organizations. In addition, we should expect them to be ego-involved in this topic. Even though the influence exerted during the course works against their initial attitudes, it may (as observed by Sherif) tend to reinforce these attitudes rather than the contrary.

Within the second grouping we should have the participants who are ego-involved on the subject of direct costing. Their initial attitudes are in agreement with the direction of influence. Here, too, we should find a reinforcement of initial attitudes, in other words an even more positive attitude to direct costing.

Our expectation as regards the third grouping is that the participants are not exposed to any fusion process working on behalf of one or the other costing method; that is to say, their ego-involvement in these topics ought to be small. To the extent these participants allow themselves to be motivated in what for them are less relevant topics, they should be amenable to influence working for a more positive attitude to direct costing and for a more questioning attitude to absorption costing.

To find out whether our findings can support these assumptions and hence fall in line with the theories of attitude influence outlined in connection with the description of instruments in Chapter 8, we illustrate the relative directions of the subgroup-change relationship within B 11 in tabulated form below.

Instead of indicating the proportional positive change for the different subgroups, we have entered positive and negative signs depending on

Fig. 12. *Tabulation of relative positive change within subgroups from B 11 (Costing methods)*. Signs affixed only for subgroups with N ≥ 10.

INITIAL HIGH SCORERS

	Change-variables							
	PS-variables Direct costing				PS-variables Absorption costing			
Subgroups	31	32	33	34	35	36	37	38
1. Absorption costing PO +	+	–	–	–	+	+	+	+
2. Absorption costing PO –			+	+	–		–	–
3. Direct costing PO +	+	+	+	+				
4. Direct costing PO –								
5. Not applicable	–	–	–	+	–	–	–	–
Prop. change tot.	.22	.32	.37	.28	.36	.33	.24	.33

INITIAL LOW SCORERS

	Change-variables							
	PS-variables Direct costing				PS-variables Absorption costing			
Subgroups	31	32	33	34	35	36	37	38
1. Absorption costing PO +	–	–	–	+	–		+	
2. Absorption costing PO –			–	+			+	
3. Direct costing PO +			+		+	+		+
4. Direct costing PO –								–
5. Not applicable	+	+	–	–	–	–	–	–
Prop. change tot.	.73	.77	.74	.79	.69	.71	.69	.66

whether the change proportion was greater or less than the mean of the total change for a change variable. In affixing these signs, we have been solely concerned with subgroups ≥ 10.

To simplify understanding of the tabulations above, we shall present an example.

The total proportion of positive change (prop.change + tot.) for initial high scorers come to .22 for PS 31. In other words, 22 percent of the persons in this group show change in accordance with the established training objective for this variable. For group 1, initial high scorers, the proportion of positive change = .27 (see page 206). It follows that group 1 (initial high scorers) receives a + marking for PS 31. Similarly, the proportional positive change for each subgroup has been compared with the total proportion of positive change for each of the component PS variables, and been given a + or — marking according to whether it placed lower or higher than the total proportion of positive change for the respective PS variables. See Fig. 12.

It would appear from the tabulation that our theoretical assumptions receive relatively strong support in the findings. Group 1, initial high scorers (I+), shows consistently higher positive change for PS variables 35—38 than the total group. Group B I+ has a correspondingly higher positive change for variables 31—34. It can be further noted that group 1 also shows predominantly lower positive change for PS variables 31—34 than the total group. A comparison of change for PS variables 35—38 could not be made for group 3 ($N < 10$). As for the "not applicable" group, a certain degree of higher positive change can be noted for PS variables 31—34. What is worth noting, however, is that this group regularly shows lower positive change as compared with the respective total groups.

We are inclined to attach importance to the confirmation of our assumptions in regard to change for specific subgroups for two main reasons: first, the assumptions were formulated with direct reference to the theories of Bakke and Sherif; and second, they are rooted in our own pilot survey, where the participants were asked to state the reasons for change or absence thereof.

If we recall the wording of training objective To 11, "To increase understanding of the importance of adapting methods of costing to particular situations", the findings we have noted here may perhaps leave little scope for greater educational optimism. Such an interpretation would be misleading, however. To begin with, it should be pointed out that our focus in groups 1 and 3 was restricted to initial high scorers. For initial low scorers the picture is not equally conclusive. Note that for group 3 (Direct costing PO +), initial low scorers, we have obtained consistently higher than average positive change for the PS variables related to absorption costing. We must further observe that the greater part of positive change as herein expressed pertains to initial low scorers (even if the sharp difference between I+ and I— should at least be seen in part as a result of regression effects, etc.).

It appears reasonable that we must reckon with more highly differentiated ego involvement in the topics than can be expressed in a "dichotomized personal opinion" of PO + and PO —. When PO + coincides with initial high scores, it is perhaps in order to assume especially strong ego involvement, which would mean that the participants are reinforced in their initial attitudes by training — even if influence works in the opposite direction. By the same token, the coincidence of PO + with initial low scores suggests that ego involvement is not equally strong, in which case training, if it proceeds in the direction of initial attitudes, may produce a change in conformity with the formulated training objectives.

This more differentiated approach, moreover, would appear to accord in full with the previous more extreme assumptions which we feel to have found support for in this sector of our analysis.

RELATIONSHIPS BETWEEN bsJI VARIABLES (JOB EXPERIENCE) AND PRETEST-POSTTEST FOR CORRESPONDING PQ-PS VARIABLES (ATTITUDES)

The analysis under this head differs from others in this chapter in that we do not study the relationship between background and change. Our point of departure instead is training objective TO 3: *To increase understanding of the importance of the company's different functions.* Accordingly, the change aimed at is to weaken the associations, positive and negative, which are assumed to obtain between job experience and attitudes to corresponding job areas prior to training. (In Chapter 10 we have also called attention to the relationship between job experience and initial attitudes to corresponding job areas.)

So as to find out whether change was produced in conformity with the training objective as formulated, we have computed the correlations between each of our job experience variables (bsJI 1—8) and all attitude variables for corresponding job areas (PQ 3—10 and PS 4—11) at pretest and posttest. The correlations are shown in Fig. 13—20. A compilation of the background and attitude variables included is given below.

Fig. 13. *Correlations between bs J I 1 (Experience of production) and certain PQ-PS variables (pre- and posttest)*

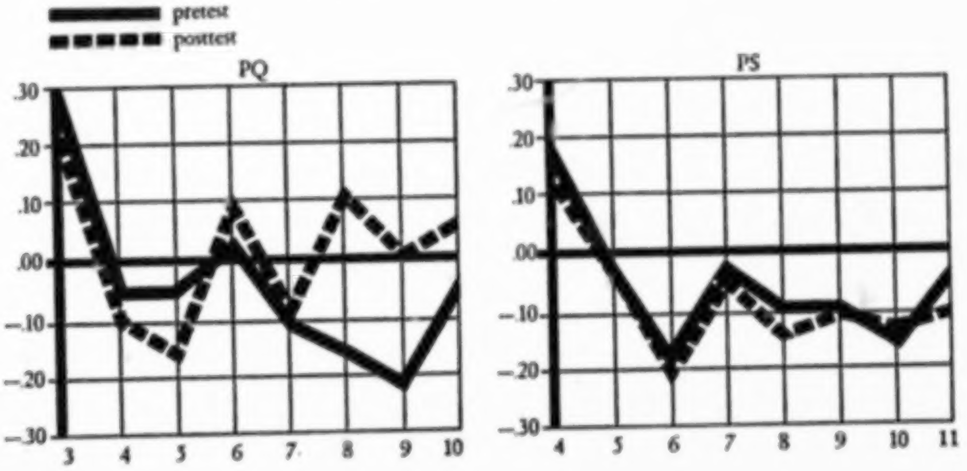


Fig. 14. *Correlations between bs J I 2 (Experience of purchasing) and certain PQ-PS variables (pre- and posttest)*

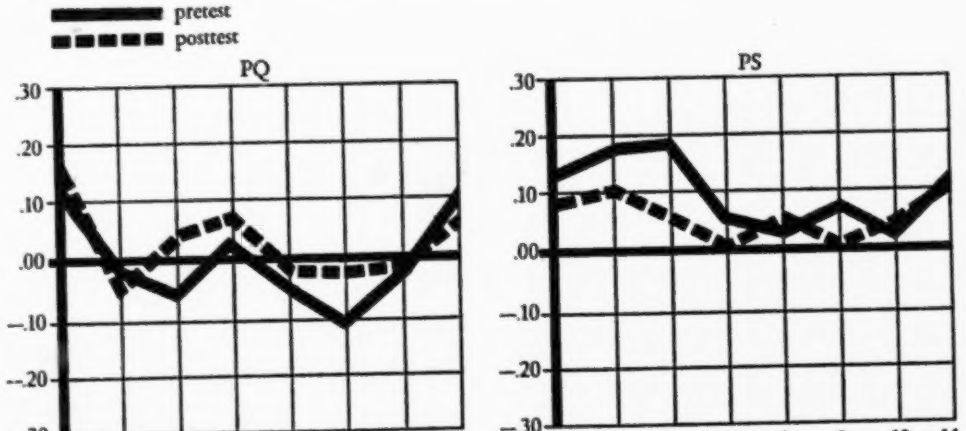


Fig. 15. *Correlations between bs J I 3 (Experience of selling) and certain PQ-PS variables (pre- and posttest)*

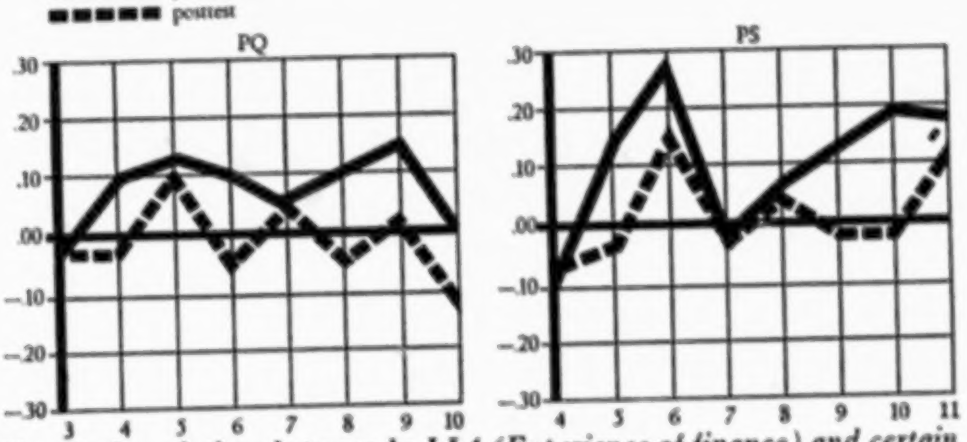


Fig. 16. *Correlations between bs J I 4 (Experience of finance) and certain PQ-PS variables (pre- and posttest)*

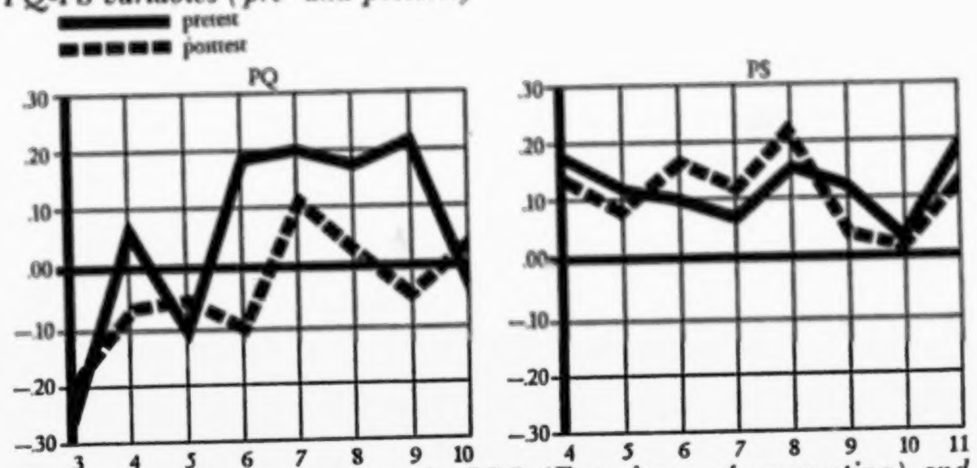


Fig. 17. *Correlations between bs J I 5 (Experience of accounting) and certain PQ-PS variables (pre- and posttest)*

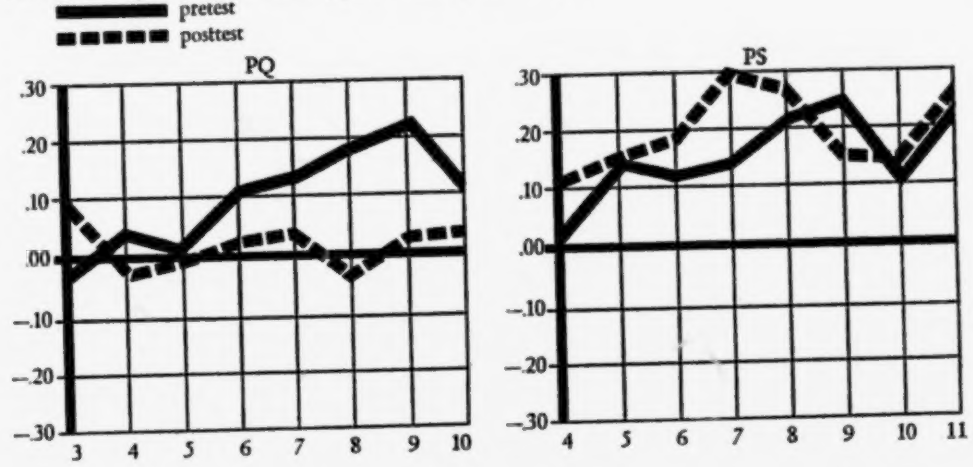


Fig. 18. *Correlations between bs J I 6 (Experience of administration) and certain PQ-PS variables (pre- and posttest)*

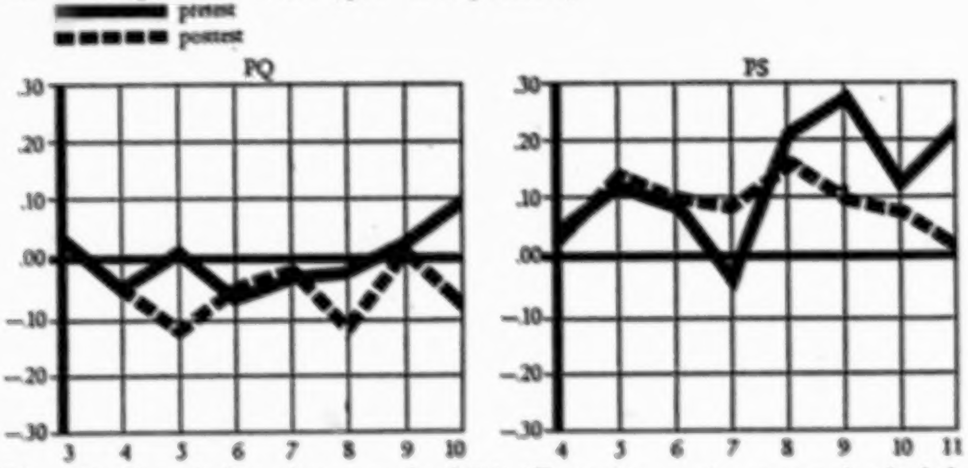


Fig. 19. *Correlations between bs J I 7 (Experience of personnel administration) and certain PQ-PS variables (pre- and posttest)*

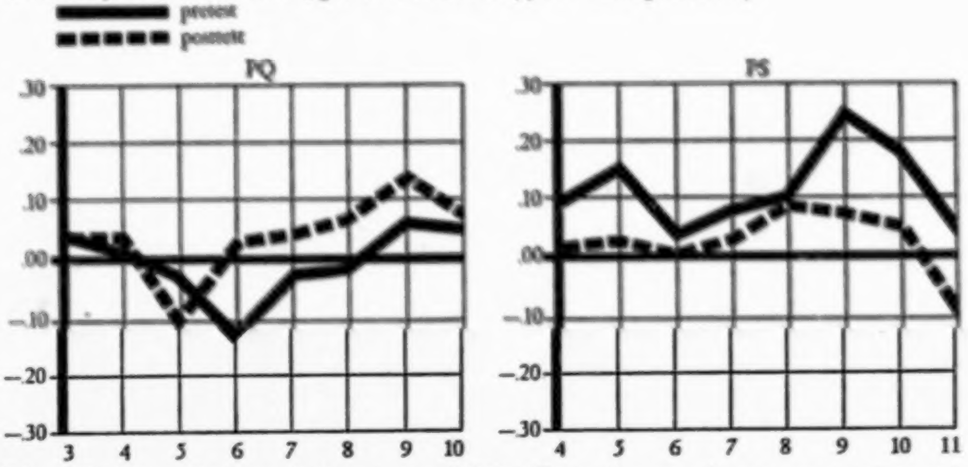
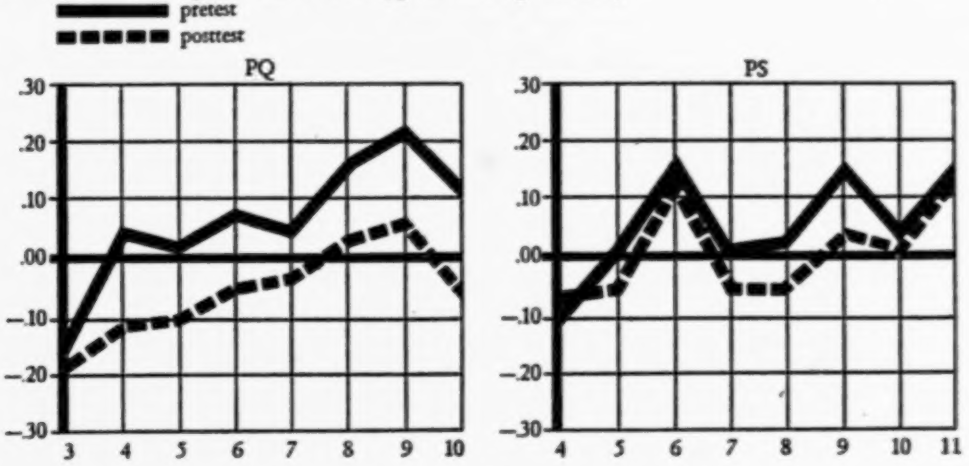


Fig. 20. *Correlations between bs J I 8 (Experience of top management) and certain PQ-PS variables (pre- and posttest)*



Discussion

The number of significant correlations between bsJI variables (job experience) and corresponding PQ-PS variables (attitudes) at pretest and posttest are shown by the following tabulation:

	pretest	posttest
bsJI 1—8 — PQ 3—10	9	3
BsJI 1—8 — PS 4—11	15	6

Taken together, the number of significant correlations at posttest have fallen to less than half for both the PQ and PS variables as compared with pretest. The finding agrees with the training objective in the sense that, in terms of correlations between job experience variables and attitudes to corresponding job areas, it aims at zero correlations. This analysis, of course, is afflicted with the same type of weaknesses we observed earlier for the O X O design.

Even if we find an overall weakening of the relationship between job experience and attitudes at posttest, this does not prevent the emergence of a few higher correlations. Thus we see that the correlation between experience of production (bsJI 1) and attitude to selling (PS 6) is more strongly negative at posttest. Experience of finance (bsJI 4) shows a higher order of positive correlation with attitude to accounting (PS 9). Experience of accounting correlates more positively with attitudes to

- — accounting (PS 9)
- — selling (PS 6)
- — finance (PS 7)
- — top management (PS 11)

Lastly, experience of top management (bsJI 8) correlates more negatively with attitude to production (PQ 3).

If, therefore, the findings appear to indicate that change has taken place in conformity with the training objective, some of the correlation comparisons with pretest and posttest suggest that here, too, we may have a more complex pattern of change and background, where training need not necessarily equalize preferences in attitudes to different job areas, but may also increase the degree of association between job experience in one area and positive or negative attitude to other job areas.

The findings of chapter 12: A final comment

In this chapter we have presented and discussed the findings on change, as well as the interaction between change and background, with reference to main hypothesis III "Change and background variables covary".

Our first analysis was concerned with the mean value differences between pretest and posttest. We found a number of significant differences, most of them pointing in the direction of the stated training objectives. In addition, it was found that the correlations between pretest and posttest were so low that, having regard to the controls we made in regard to the reliability and structural stability of our measuring variables, change could be assumed *even* where we obtained zero differences in the mean values. A change of this kind could then point in different directions for different participants, or for subgroups of participants, depending on dissimilarities in their background.

The subsequent analyses, intended to measure the relationship between change and background variables on the basis of our background hypotheses, have not produced findings which permit us to verify these hypotheses generally. On the other hand, different segments of the analyses have produced findings which we think give meaningful support to the assumptions of a relationship between change and background.

Within certain areas, therefore, we have found substantiation for believing that changes have taken place in conformity with the stated training objectives and as a result of training. At the same time, we have been unable to demonstrate the operation of change in other areas. In undertaking a number of measures to simplify the analysis of change, we have underlined the complexity of the problems here involved — a complexity which makes it difficult methodologically and statistically to identify true change. As to the relationship between background and change, we think we have found support for assumptions of a meaningful link on several points. In a number of areas we have been unable to observe such a relationship. Here again, of course, the complexity of the problems involved interpose a formidable obstacle.

By any reasonable standard this complexity, together with defects in the design, measuring instruments, execution and other aspects of the study, means that we have been able to capture change and its interaction with background to only a limited extent.

In the matter of seeing change in terms of mean value differences between pretest and posttest, the observations are of course easiest to make if all participants alter their behavior in one and the same direction. If so, and if the direction of change agrees with the stated training objectives, the persons responsible for the course will no doubt feel gratified that the result has lived up to expectations. But insofar as the individual needs of the participants deviate from these objectives, it cannot be said that such a result is "devoutly to be wished". The training situation we have studied gives us cause to suspect that a divergence of this kind has existed. Thus in measuring instrument B 5—B 11, which purports to identify conditions in one's organization and the personal opinion of these conditions held by each participant, we have found examples which markedly differ from the conditions which the training seeks to achieve. If a participant comes from a "deviant" company and his attitude is favorable to its conditions, the different attitude which training seeks to instill may well have a negative impact upon his return to the job situation. To some extent our findings tend to support the opposite conclusion, namely that the participant is reinforced in his initial attitudes. This of course serves to reduce the mean value differences between pretest and posttest in line with the training objectives. However, this must not be interpreted to mean that the training has failed. It should instead be seen as expressing the individual's ability to avoid a cognitive dissonance which might embarrass him in his job situation.

In training of the kind we have studied, moreover, the absence of change in some participants may simply be due to insufficient motivation with respect to one or more items of subject matter. If we were to permit ourselves to liken a general management training course such as this with a Swedish smorgasbord, we know that the assembled guests are scarcely in the habit of sampling every dish it offers. Similarly, the participants in a training course are not disposed to assimilating all of its topics in equal measure. Some of our findings lend support to the assumption that change has failed to occur because of inadequate motivation. In studying the relationship between general background variables and change, we found that bg 8 — operationally defined as expressive of random and unplanned reasons for course attendance —

stood out from the other bg variables in the higher frequency of significant correlations with change which were consistently negative.

Further, when comparing subgroups from B 5—B 11 we found that the subgroups of participants for whom a particular condition was inapplicable to their own organization, showed a tendency towards less than average change in relation to corresponding attitude variables.

Chapter 13

SUMMARY AND CONCLUSIONS

Aims of the study

In Chapter 2 we conducted a fairly extensive discussion on training objectives and their relationships with evaluation. Among other things, we sought to illustrate how the determination of training content and the execution of courses can be preceded by a chain of training objectives. The same approach is applicable to an analysis of the aims of this study.

Here again we can see a chain of objectives which have preceded the organization and execution of our research project. The incentive for undertaking it was the need felt by program directors for more systematic and perhaps more objective information as to how participants are affected by the top management courses they take at Yxtaholm.

In accepting the invitation to carry out an evaluation study on this basis, we were largely motivated by a clear pedagogical interest in conformity with the aim of the program leadership. In this situation, however, a change or rather an amplification of the aim was made, with the acquiescence of the directors: that is, we were then interested in trying to anchor the evaluation study in a tentative formulation of theories, and also to shed light on methodological questions in connection with the evaluation of management training.

A third phase of change in the formation of aim may be described as a concretion phase. This occurred when we penetrated earlier research in the field and carried out our own pilot surveys.

The primary aim of the evaluation study in this phase is to ascertain how initial attitudes and change covary with the background of participants. This aim was then made to determine the planning and execution of the main investigation. At the same time we want to emphasize that we consider this aim to be directly related to the other two aims mentioned above.

Delimiting the terms of reference

The study was carried out in a practical training situation, which inevitably imposed certain limitations as regards selection of problem areas for study, selection of research methods, availability of time for testing, etc. But in addition to "involuntary" limitations of this kind, every researcher in this field must accept others of a "voluntary" nature. As we noted earlier, Kile (1966) strongly emphasized two points:

1. that the researcher is aware of the universes included in the total evaluation process;
2. that he is aware of the limitations he must make in his empiricism and of what these limitations imply.

Within the total evaluation process we can also see how different researchers have resorted to highly dissimilar strategies in assessing the merits of management training. If, say, training-related or work-related measures of change are adopted as criteria, these will have consequences not only for the construction of measuring instruments but often for the whole research design as well. The same applies to that part or parts of the communication process one primarily wishes to study. In our study we have imposed various limits and defined our terms of reference as follows:

By top management education we refer to external, residential, general management training courses for top and next-to-the-top executives and specialists in companies and comparable organizations.

This study will not be concerned with the outcome of training, considered as changes in attitudes, that may be derived from teachers specific items of instruction, or instruction methods; instead, we limit our purview to participants in the program and their response to the instruction as a whole.

Only training-related measures of change will be used to control training results.

In terms of methodology and theory, we shall be concentrating on three complexes of problems:

— Relationship between training objectives and training evaluation.

— Relationships between initial standing and change on one hand and background factors on the other.

— Attitude change.

The training situation under study

The empirical portion of the study was carried out at Yxtaholm, the residential school operated by the Swedish Employers Confederation, where three 6-week courses are held every year with about 35 participants in each. The program may be described as consisting of *external, residential, general training courses for top managers.* Three main areas of subject matter are covered: business organization, personnel administration and business economics.

Two pilot surveys were carried out. In the first of these, program directors and teachers were interviewed in order to establish training objectives. In the second survey, 130 participants in four earlier courses were interviewed to provide a basis for the formulation of background hypotheses.

The main investigation pertains to 140 participants who attended five later courses.

Research strategy

In our study we elected to relate evaluation to the training objectives which immediately precede and determine the content and execution of training (Chapter 2). The findings of a pilot study yielded various training objectives as follows:

A. Business organization

To 1. To increase understanding of the importance of having a company explain corporate aims to itself and to its employees.

To 2. To increase understanding of the importance of having a company coordinate its resources.

To 3. To increase understanding of the importance of the company's different functions.

To 4. To increase understanding of the importance of having a company clarify and apply its policies.

To 5. To increase understanding of the importance of performance controls.

B. Personnel administration

To 6. To increase understanding of the importance of personnel management questions.

To 7. To increase understanding of the importance of internal information and communication.

To 8. To increase understanding of the importance of personnel administrative techniques.

C. Business economics

To 9. To make participants more critical of source data used in profitability analyses.

To 10. To increase understanding of the importance of adapting liquidity to general company policy.

To 11. To increase understanding of the importance of adapting methods of costing to particular situations.

D. Scientific method in management

To 12. To increase understanding of the importance of scientific method in management work.

As we reported earlier, the study primarily seeks to find out how initial attitudes and change covary with background of participants. We have formulated the following hypotheses:

I Initial attitudes and background variables covary.
II Initial attitudes and change covary.
III Change and background variables covary.

The participants in two courses were tested in a pilot survey with reference to attitudes at pretest and posttest, after which they were interviewed in regard to causes of initial attitudes, change and absence of change. We were then able to formulate the following subhypotheses on the relationships between initial attitudes and change on the one hand, and background data of participants on the other.

Initial attitudes and change covary with

Hb 1 Age
Hb 2 Intellectual ability
Hb 3 Flexibility
Hb 4 Knowledge
Hb 5 Job experience
Hb 6 Present job duties
Hb 7 Reasons for attending course
Hb 8 Policies within the participant's organization and his "proximity" to these policies
Hb 9 Interests

Even though we have worked with hypotheses, our study has very much been of an explorative character.

In the main investigation we drew on change-related measures to determine initial attitudes and change. The reasons therefore, together with a comparison between these measures and change-related measures, were discussed in Chapter 1.

The research design we adopted was the one-group pretest-posttest (OXO). In Chapter 4 we discussed the general weaknesses of this design and in Chapter 12 its usefulness for our study. Chapter 8 gave an overview of the instruments for testing the hypotheses, construction work, motives for choice of items, reliabilities and so forth.

Instruments for measuring initial attitudes and change corresponding to the training objectives are:

1. The Questionnaire (PQ variables)
2. The Semantic Differential scales (PS variables)

The instruments for measuring background variables corresponding to the background hypotheses are:

B 1 Questionnaire on background data of participants.

B 2	Questionnaire to identify reasons for taking course.
B 3	Raven's progressive matrices.
B 4	Flexibility-rigidity Scale version by Rubenowitz.
B 5—11	Questionnaire to identify policies within the participant's organization and his "proximity" to these policies.
B 12	Questionnaire to identify interests related to course program.
B 13	Questionnaire to identify knowledge and job experience related to course program.

A comprehensive statistical analysis was undertaken to test and shed explorative light on the hypotheses. A methodological choice of strategy for the analysis had to do with whether or not we ought to compress the data before proceeding to determine relationships in accordance with the main hypotheses. This choice has important consequences for our study, since we have drawn on a large quantity of variables pertaining to initial attitudes, change and background data. In Chapter 10 we motivated our decision to perform most of the analyses at the item level.

Findings

In Chapters 10 through 12 we described and discussed the findings which emerged. Even though our analyses were greatly devoted to finding significant correlations and mean value differences, we have consistenly sought (in conformity with the strongly explorative bent of our study) to look for meaningful trends rather than note the presence or absence of significance.

In Chapter 10 we sought to test and exploratively illuminate main hypothesis I, "Initial attitudes and background variables covary", by way of a number of subhypotheses related to defined background areas.

The main hypothesis can naturally not be held varified in the sense that we have obtained significant correlations for each of these background areas. Nor was that reasonable to expect. This hypothesis was formulated to serve as a framework for our tests of the relationships between background variables and initial attitudes.

By the same token, the subhypotheses cannot be held generally verified, since we did not proceed on the assumption that we would consistently find significant correlations there, either.

None the less, our findings disclose various correlations and correlational patterns which make it justifiable to conclude that meaningful relationships between background variables and initial attitudes do exist in a number of essential background and attitude areas.

In Chapter 11 we were able to note, in accordance with our main hypothesis II, "Initial attitudes and change covary", that correlations were consistently negative. This is in full accord with the usual findings of other researchers. We went on to describe the possible causes of this finding, though we did not think it necessary to elaborate on their relevance for our case. In consequence of our findings we stated that the relationships between background factors and change should not be studied unless initial attitudes are taken into account.

The centrally important findings of our study are presented in Chapter 12, which also contains the most difficult methodological and statistical problem-complex that can be expressed in main hypothesis III, "Change and background variables covary".

Our first analysis was concerned with the mean value differences between pretest and posttest. We found a number of significant differences, most of them pointing in the direction of the stated training objectives. In addition, it was found that the correlations between pretest and posttest were so low that, having regard to the controls we made in regard to the reliability and structural stability of our measuring variables, change could be assumed *even* where we obtained zero differences in the mean values. A change of this kind could then point in different directions for different participants, or for subgroups of participants, depending on dissimilarities in their background.

The subsequent analyses, intended to measure relationships between background variables and change on the basis of our background hypotheses, have not produced findings which permit us to verify these hypotheses generally. On the other hand, different segments of the analyses have produced findings which to some extent give meaningful support to the assumptions of relationships between background and change.

Every communication process in which a message is transmitted to widely different recipients entails a serious difficulty: How shall the communcator formulate his message so that recipients will put on it the interpretation he wants?

This situation often arises when the findings of applied research are presented and interpreted. The researcher who has carried out a project of this kind must bear in mind that his final report will be aimed not only at colleagues and scientific expertise, but also at practicians in the researched field.

Here the researcher is all to likely to get caught in controversy. He has his scientific frame of reference, which makes it natural for him to describe and discuss his findings in terms which satisfy certain criteria of the scientific community. At the same time the practicians have a legitimate interest in being apprised of the findings and the researcher's discussion of them with reference to their own horizons. The practician will ask: What consequences will the findings have for my work? When he reads the report, he may be disappointed in the way the researcher presents and discusses his results. His conclusions are thought to be shot through with too many reservations and qualifications. For his part the researcher may feel that the practician is inclined to over-generalize from the findings or perhaps even draw the wrong practical conclusions from them. It would lead us too far afield to explain the interaction here involved: researcher — research findings — practicians — application, which has been increasingly noted in recent years. Suffices it for us to observe that in this section on pedagogical consequences, we have deliberately sought to give viewpoints which are of particular interest to the practician. We have tried in some measure to answer his question: What consequences will the findings of our study have for practical work with management training of the type we have studied here?

ANALYSIS OF BACKGROUND DATA

We have paid great attention in our study to the background of participants. The data we collected have strikingly demonstrated what a heterogeneous group they make in a number of essential aspects.

The companies or organizations the participants represent differ from one another in line of business, policies, size, etc. Participants greatly differ from one another in job experience, knowledge, reasons for attending courses, and other characteristics.

Given this heterogeneity, individual training needs are bound to vary. Even a rough outline of the shifting individual background factors gives the program directors and teachers information which cannot help but have important educational consequences. The planning and organization of any one course require an analysis of training needs. An essential component here is the individual analysis, which maps out the knowledge, skills and/or attitudes of the presumed participants. Not until that is done will it be possible to decide the extent to which participants need training. We are quite aware that external courses of the type we have studied pose considerable difficulties in this respect. At the same time, however, we are just as fully convinced that a charting of participant backgrounds greatly helps the program directors and teachers make relevant judgements about the training objectives that shall determine the contents and methods of courses.

Once the heterogeneity of participants stands out as a highly evident fact, a question that can scarcely be avoided is: When a class is composed of persons having such widely varying backgrounds, can there be justification for carrying out a course in the first place?

In answering that question, we should first of all observe that every group selected for training will inevitably be heterogeneous in a number of more or less important dimensions. With regard to the participant group in our study, we should therefore ask: Is it *too* heterogeneous in terms of training-relevant dimensions to permit each participant to profit so much from the management training that it more than offsets the investment he makes in time and expense? Can such training be justified as superior to other alternatives for his development as a manager. Naturally, these questions cannot be answered in general terms.

In this connection, an initial point to stress is that the course content offered in this type of training will be poorly communicable unless the composition of the participant group is accepted. Further, heterogeneity as such is generally regarded as a good instrument for making this type of training effective, in that there is a large body of accumulated experience on which to draw (see for example Bakke, 1959, p. 12). Among course administrators, too, it is well known that participants in this type of training regard it as a distinct advantage to be able to learn from one another's varying experiences.

To be sure, the differences between participants in job experience, educational level and intellectual ability may make it difficult for a teacher to get his message across in a way adapted to every participant. The findings of our study, however, do not lend support to such an assumption. Bearing in mind the existence of different training needs, a recommended approach would be to investigate the feasibility of adding specific units of subject matter for participant subgroups to the common course content.

CHARTING OF INITIAL ATTITUDES

As part of the one-group pretest-posttest design, we explored the initial attitudes of participants in those areas which were matched by the training objectives. Within certain areas we found a considerable affinity of attitudes as well as broad agreement with the objectives. A similar affinity was found in other areas, but the attitudes involved were at variance with the objectives. Still other areas exhibited a greater divergence of attitudes.

Here we can tie in again with what we said earlier about the significance of individual analysis for the determination of training objectives. Thus it is vital for program directors and teachers to know the "level" of participant attitudes and how they are distributed. The logical consequence of this in educational terms is that training can then be adapted to the participants. Certain units of subject matter, perhaps, need not be given so much attention, whereas greater scope must be provided for other units.

In regard to initial attitudes and background variables, our study has disclosed a number of interrelationships. Thus it was found that personal interest in and knowledge and experience of certain areas correlated positively with initial attitudes thereto — a datum that should also encourage program directors and teachers as to their potential for influencing attitudes.

CHANGED ATTITUDES AS A RESULT OF TRAINING

Our measurements of change, as expressed by mean value differences between pretest and posttest, have produced variable readings. In some areas we could not detect any differences, while in others there were sizable mean value shifts, chiefly in accordance with the established training objectives. At the same time we consistently noted relatively low positive correlations between pretest and posttest.

If anything, the educational consequence to be drawn from these findings needs to be phrased as a warning: Don't put too much trust in the picture which mean value differences give. If a mean value comparison does not express a difference, that may well be because no influence took place. But in order to draw that conclusion, the correlation between pretest and posttest must be high. If, as in our case, the correlations are relatively low throughout, while both pretest and posttest show satisfactory reliability at the same time, we have reason to assume that the measure conceals a change which goes in different directions for individuals or subgroups.

Similarly, an observed difference that conforms with an established training objective does not necessarily mean that the attitudes of all participants have changed in the desired direction. On the contrary, the difference may be solely attributable to those participants whose initial attitudes already agreed with the training objective, in that these attitudes were reinforced. As for participants whose initial attitudes corresponded less well to the objective, they may even have been negatively influenced.

The foregoing viewpoints tie in with our studies of the relationships between change and background, where in respect of certain specific background variables and changes in corresponding areas we were able to observe tendencies which support these viewpoints. In addition, our findings also bear out the theories on attitude influence which we have drawn upon for making our analyses.

In regard to the relationships between change and general background factors, we found a tendency for change to relate with the variables relating to reasons for course attendance.

Two educational consequences should be drawn from the foregoing: first, observation should be made of the degrees of motivation which impel participants to take training; and second, the company or organization which sends staff members to courses should collaborate with the program directors in impressing upon every participant why he should undergo training and how the course content meets his training needs — in other words, motivate him before the training starts.

The final educational consequence we draw from this study is expressed in the form of a hope: The people engaged in management training should be more generally aware that if training is to be more effective, it must not be primarily seen as an exercise in instruction; provision must also be made for an analysis of training objectives and evaluation as necessary ingredients of training activity and at the same time broaden the evaluation process ifself. In our opinion, a greater effort on these counts cannot be escaped if one is to counter the objection implied by the question that is being increasingly asked: "Is management training really worth while?"

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PQ 37. Absorption costing is generally very useful in pricing.
PQ 38. Greater provision should be made for scientific method in management.
PQ 39. Greater provision should be made for scientific method in purchasing.
PQ 40. Greater provision should be made for scientific method in production.
PQ 41. Greater provision should be made for scientific method in selling.
PQ 42. Greater provision should be made for scientific method in personnel administration.

Items in the Semantic Differential scales

PS 1. Explaining corporate objectives to higher executives. (a high mark = positive attitude)
PS 2. Coordinating the company's resources.
PS 3. Getting functional heads to cooperate.
PS 4. Production.
PS 5. Purchasing.
PS 6. Selling.
PS 7. Finance.
PS 8. Accounting.
PS 9. Administration.
PS 10. Personnel administration.
PS 11. Top management.
PS 12. Written guidelines in detail of company policy for executives.
PS 13. Written guidelines in general of company policy for executives.
PS 14. Performance measurement and control — lower-level employees.
PS 15. Performance measurement and control — foremen.
PS 16. Performance measurement and control — department heads.
PS 17. Performance measurement and control — vice presidents.
PS 18. Performance measurement and control — presidents.
PS 19. Managing personnel.
PS 20. Internal information and communication.
PS 21. Recruitment and selection.
PS 22. Induction of new hires.
PS 23. Training of personnel.
PS 24. Profitability analyses.
PS 25. Data included in profitability analyses.
PS 26. Very high liquidity in every situation.
PS 27. High liquidity as a matter of principle.
PS 28. Liquidity adapted to company policy.
PS 29. High liquidity not intrinsically desirable.
PS 30. Consistent maintenance of low liquidity.
PS 31. Direct costing — choice of product mix.
PS 32. Direct costing — choice of production process.
PS 33. Direct costing — control.
PS 34. Direct costing — pricing.
PS 35. Absorption costing — choice of product mix.
PS 36. Absorption costing — choice of production process.
PS 37. Absorption costing — control.
PS 38. Absorption costing — pricing.
PS 39. Scientific method — management.
PS 40. Scientific method — purchasing.
PS 41. Scientific method — production.
PS 42. Scientific method — sales.
PS 43. Scientific method — personnel administration.

APPENDIX

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Items in the Questionnaire

PQ 1. All to often, unfortunately, management has not made clear corporate objectives to itself and to higher executives. (strongly agree = 1 p)

PQ 2. Functional heads often find it difficult to subordinate their functional interests to the company's overall objectives.

PQ 3. Production is often accorded too much importance in relation to other activities in the company.

PQ 4. Purchasing is often accorded too much importance in relation to other activities in the company.

PQ 5. Selling is often accorded too much importance in relation to other activities in the company.

PQ 6. Finance is often accorded too much importance in relation to other activities in the company.

PQ 7. Accounting is often accorded too much importance in relation to other activities in the company.

PQ 9. Administration is often accorded too much importance in relation to other activities in the company.

PQ 9. Personnel administration is often accorded too much importance in relation to other activities in the company.

PQ 10. Top management is often accorded too much importance in relation to other activities in the company.

PQ 11. A company should have written guidelines in detail of company policy for its executives.

PQ 12. A company should have written guidelines in general of company policy for its executives.

PQ 13. A company should have systematic performance measurement and control of lower-level employees.

PQ 14. A company should have systematic performance measurement and control of foremen.

PQ 15. A company should have systematic performance measurement and control of department heads.

PQ 16. A company should have systematic performance measurement and control of vice presidents.

PQ 17. A company should have systematic performance measurement and control of presidents.

PQ 18. Executives should take greater interest in their direct personnel management duties.

PQ 19. Companies should take interest in internal information and communication.

PQ 20. Companies should take greater interest in recruitment and selection.

PQ 21. Companies should take greater interest in the induction of new hires.

PQ 22. Companies should take greater interest in the training of personnel.

PQ 23. Companies should systemize their profitability analyses to a greater extent than they are now doing.

PQ 24. The data included in profitability analyses are usually defective.

PQ 25. A company should in every situation demand very high liquidity.

PQ 26. A company should demand high liquidity as a matter of principle.

PQ 27. A company should adapt liquidity to its company policy.

PQ 28. A company should not look upon liquidity as something intrinsically desirable.

PQ 29. A company should consistently maintaine low liquidity.

PQ 30. Direct costing is generally very useful in choice of product mix.

PQ 31. Direct costing is generally very useful in choice of production process.

PQ 32. Direct costing is generally very useful in control.

PQ 33. Direct costing is generally very useful in pricing.

PQ 34. Absorption costing is generally very useful in choice of product mix.

PQ 35. Absorption costing is generally very useful in choice of production process.

PQ 36. Absorption costing is generally very useful in control.

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